UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF CALIFORNIA

CENTER FOR BIOLOGICAL DIVERSITY, *et al.*,

Plaintiffs,

v.

U.S. BUREAU OF LAND MANAGEMENT, *et. al.*,

Defendants.

Case No. 1:23-CV-00938-JLT-CDB

DECLARATION OF GABRIEL GARCIA IN SUPPORT OF FEDERAL DEFENDANTS' MOTION FOR VOLUNTARY REMAND

DECLARATION OF GABRIEL GARCIA

I. Background

1. I, Gabriel R. Garcia, declare that the following statements are true and correct to the best of my knowledge and belief and that they are based upon my personal knowledge and information contained in the records of the United States Bureau of Land Management (BLM).

2. I am the Field Manager for the Bakersfield Field Office of the Central California District, BLM. I have held that position since 2013. Prior to serving in this capacity, I was the Bakersfield Field Office's Assistant Field Manager, Minerals from 2007-2013, and prior to holding that position I was an Environmental Protection Specialist (2005-2007) where I was responsible for preparing environmental compliance documentation for oil and gas actions.

3. My current duties include managing and overseeing the Bakersfield Field Office, which includes administering the permitting, development, and production of onshore oil and gas deposits on Federal leases in my region. As Field Manager, I am responsible for resource management and land health.

4. I oversaw the approval process for BLM's Decision Record and Finding of No Significant Impact regarding California Resource Production Corporation's (CRPC) six applications for permits to drill (APDs) within the Mount Poso Oil Field in Kern County, CA (Project). The Decision Record was issued on May 31, 2023. True and correct copies of the

Decision Record and the Finding of No Significant Impact are attached as Exhibits A and B, respectively.

5. This declaration is filed in support of BLM's Motion for Voluntary Remand.

II. CRPC's Permit Application

6. California Resource Corporation (CRC), the parent corporation of CRPC, holds 46 federal mineral leases within California. This includes federal mineral leases CACA004999 & CAS019301C in Sections 4 & 22, T27S, R28E, Mount Diablo Base Meridian (MDBM) in Kern County, CA. CACA04999 was issued on August 5, 1968 and CAS019301C was issued on September 1, 1947. The leases are located on private lands containing BLM-administered mineral estate within the Mount Poso Oil Field. Lease No. CACA04999 has 16 producing wells and Lease No. CAS019301C has 34 producing wells.

7. Once a leaseholder, operator, or designated agent identifies an oil and gas deposit on a Federal lease, they can file an APD. The BLM posts APDs on its 30-Day Federal Public Posting Report Webpage. The APD process is governed by 43 C.F.R. § 3160.

8. On July 15, 2022, CRPC submitted six APDs to drill Wells in Kern County: King 1008V, King 1009V, Sarrett Fee 1118FVH, Sarrett Fee 1145LVH, Sarrett Fee 1146TVH, and Matthew Fee 1113LVH on Lease Nos. CACA004999 and CAS019301C. These proposed well sites are on split estate land: BLM has the mineral rights and a private entity owns the surface. CRPC currently has landowner agreements with the two entities that own the surface where the wells would be drilled.

9. On August 1, 2022, BLM notified the public that it was considering the APDs on the E-Planning website. This notice initiated the 30-day scoping period. BLM also posted partial copies of the APDs, including all non-confidential information per 43 C.F.R. §3171.12, in the front lobby of the Bakersfield Field Office for the same 30-day period. BLM received comments from the Center of Biological Diversity, Earthjustice, The Wilderness Society, Patagonia Inc., Natural Resources Defense Council, Chalon Indian Council of Bakersfield of the Chalon Indian Nation, the Central California Asthma Collaborative, Friends of the Earth, Leadership Counsel for Justice & Accountability, and the Center on Race, Poverty & the Environment.

10. In approving the Project, I considered the overall goals of the federal government, the Department of the Interior (DOI), and BLM. I also considered the need for action as established by BLM's responsibility under the Mineral Leasing Act of 1920 as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980 and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 to allow reasonable access to develop a federal oil and gas lease.

11. I also considered BLM's regional strategic approach under the Bakersfield Resource Management Plan (RMP) as required by 43 C.F.R. § 1610.5. In approving the Project, I ensured that the proposed actions conform with the RMP. The Project is specifically provided for in the land use plan objective MM-O-1, "Facilitate reasonable, economical, and environmentally sound exploration and development of leasable minerals while minimizing impacts to other resources." The Project is located on leases that were issued prior to the RMP, which recognizes all valid existing rights.

12. BLM conducted an Environmental Assessment (EA) for the Project. A true and correct copy of the EA is attached as Exhibit C.

13. I understand that, among other claims, Plaintiffs allege that the Clean Air Act emission analysis in the EA was inadequate. They allege that BLM did not provide the underlying data or sources to support its emissions calculations nor explain how its emissions estimates are lower than other BLM field offices or Kern County.

14. In the EA, BLM concluded that although the wells will increase total emissions of nonattainment pollutants or precursors in Kern County, the increases are small compared to ongoing emissions and are below federal conformity *de minimis* thresholds. (EA pp. 5-6, 19; 30-31.) Therefore, the wells would not be expected to degrade current air quality in a significant or even detectable way and would not require a federal conformity determination. Tables 4.1 and 4.2 of the EA addressed criteria pollutants within the San Joaquin Valley Air Basin and California. (EA, pp. 30-31.) These calculations used a methodology developed by and used across BLM known as the Emissions and Modeling Impacts Tool (EMIT).

15. EMIT was designed for standard oilfield conditions, well designs, and emission sources found in BLM states such as New Mexico, Utah, Colorado, Wyoming, among others. Conditions at California wells were not considered in its design and many California wells, including the six wells at issue, do not fall within EMIT design assumptions.

III. BLM's Remand Request

16. In the time since BLM completed environmental review of the Project, the BLM National Operations Center (NOC) air staff informed me that use of the EMIT emission estimator for the six wells at issue did not account for California and specific well attributes.

17. Over the past year, BLM CA developed methodology based on EPA's MOVES3 emission model that better represents California-specific emissions data. This new methodology is more accurate for California wells and should be applied to the wells at issue to estimate air emissions for federal conformity screening and for the NEPA analysis. The method uses California-specific data, including Kern County data, where available and appropriate.

18. Thus, BLM is requesting remand of the Decision Record without vacatur to supplement the EA with the more appropriate MOVES3 methodology to calculate air emissions data. While BLM cannot prejudge the outcome of its analysis, BLM expects that its use of MOVES3 will not change its overall conformity analysis.

19. On remand, BLM would also take the opportunity to review other aspects of the EA, including cumulative effects analysis and environmental justice concerns. These analyses will provide more explanation and better reflect the policies of the administration.

20. BLM will complete this review as expeditiously as practicable and will seek to complete the remand process within six months of the filing of the motion for voluntary remand, i.e. May 2024. BLM will use the same notification process as used for the initial EA—the supplemental analysis will be posted on ePlanning, in accordance with BLM policy. BLM will inform the parties to this litigation when the supplemental analysis has been posted online. Upon completion of the supplemental analysis, BLM will decide whether to affirm its original decision, issue a new decision, or conduct additional NEPA analysis.

I declare under penalty of perjury that the foregoing is true and correct. Executed this 6th day of November, 2023, in Bakersfield, California

GABRIEL GARCIA

Digitally signed by GABRIEL GARCIA
Date: 2023.11.06 13:27:24 -08'00'

Gabriel Garcia, Field Manager
Bakersfield Field Office
Central California District, BLM

Exhibit A

United States Department of the Interior
Bureau of Land Management
Bakersfield Field Office

Decision Record

California Resource Production Corporation
Mount Poso; 6 Applications for Permit to Drill
DOI-BLM-CA-C060-2022-0112-EA
Programmatic Project #134

Introduction

On 7/15/2022, California Resource Production Corporation (CRPC) submitted six (6) Applications for Permits to Drill (APD) to drill Wells: King 1008V, King 1009V, Sarrett Fee 1118FVH, Sarrett Fee 1145LVH, Sarrett Fee 1146TVH, & Matthew Fee 1113LVH on federal mineral leases CACA004999 & CAS019301C in Sections 4 & 22, T27S, R28E, Mount Diablo Base Meridian (MDBM) in Kern County, CA. The proposed project would occur on private lands containing Bureau of Land Management (BLM) administered mineral estate within the Mount Poso Oil Field. Project implementation would include expansion and grading of five existing well pads, the construction of one additional pad, the installation of associated power poles and pipelines, and the drilling of six new wells.

The purpose of the proposed action is to respond to the APDs submitted by CRPC to drill six new oil wells and stage associated facilities required to increase production on federal mineral leases CACA004999 & CAS019301C.

The need for the action is established by BLM's responsibility under the Mineral Leasing Act of 1920 as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980 and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 to allow reason able access to develop a federal oil and gas lease.

Decision

I have reviewed the recommendations on the proposed action addressed in this environmental assessment. I find this action to be in conformance with applicable land use plans, to effectively serve the public, and to not cause unnecessary or undue degradation. It is therefore my decision to approve the proposed action (the expansion and grading of five existing well pads, the construction of one additional pad, the installation of associated power poles and pipelines, and the drilling of six new wells on federal mineral leases (CACA004999 & CAS019301C) in the Mount Poso Oilfield), which is subject to the Design Features/Conditions of Approval identified for the proposed action in the Environmental Assessment.

Alternatives Considered but not Selected

A No Action Alternative that would deny the application was considered, but not selected.

Decision Rationale

The decision to approve the Applications for Permit to Drill on BLM administered subsurface minerals in the Mount Poso Oilfield best meets the purpose and need of BLM by California Resource Production Corporation to expand production on federal mineral leases CACA004999 & CAS019301C, pursuant to the *Federal Land Policy and Management Act of 1976*, the *Mineral Leasing Act of 1920*, as amended, and 43 CFR 3160.

Title 43 CFR 1610.5 requires resource management authorizations and actions conform to the approved resource management plan. The proposed action has been reviewed for conformance with the Bakersfield Resource Management Plan approved on December 22, 2014. The BLM has determined the proposed action conforms with the land use plan as the proposed action is specifically provided for in the land use plan objective MM-O-1 "Facilitate reasonable, economical, and environmentally sound exploration and development of leasable minerals while minimizing impacts to other resources" (BLM, 2014; pg 75). The proposed action is located on leases CACA004999 & CAS019301C, which was issued prior to the 2014 Bakersfield RMP. The 2014 Bakersfield RMP recognizes all valid existing rights (BLM, 2014; pg 1).

Consultation and Coordination

Public Involvement

The BLM posted notification that it was considering these NOSs/APD's on the E-Planning public website on August 1st, 2022. This notice initiated the 30-day scoping period. The BLM also posted copies of the Application for Permit to Drill (APD) in the front lobby of the Bakersfield Field Office for that 30-day period. Comments from the Center of Biological Diversity and Earth Justice were received. Comments have been addressed in this EA.

Biological Consultation

Formal consultation with the U.S. Fish and Wildlife Service was initiated in 2016. The Fish and Wildlife Service issued their "No jeopardy" biological opinion on December 22, 2017 (Programmatic Biological Opinion on Oil and Gas Activities on Bureau of Land Management Lands in the San Joaquin Valley, 08ESMF00-2016-F-0683). The 2017 Oil and Gas Programmatic Biological Opinion provides take coverage for authorization of individual projects occurring on surface and subsurface lands administered by the BLM in the San Joaquin Valley that disturb less than 10 acres of habitat or that encompass linear actions less than 10 miles long. This project occurs in Kings County and disturbs 1.092 acres, thus satisfying both requirements for coverage under the 2017 Oil and Gas Programmatic Biological Opinion. In accordance with the requirements of the 2017 Oil and Gas Programmatic Biological Opinion, the project applicant owes 3.276 acres of compensation.

Plan Consistency

Based on information in the EA, the project record, and recommendations from BLM specialists, I conclude that this decision is consistent with the Bakersfield RMP; the Endangered Species Act; the National Historic Preservation Act; the Paleontological Resources Preservation Act; other cultural resource management laws and regulations; Executive Order 12898 regarding Environmental Justice; and Executive Order 13212 regarding potential adverse impacts to energy development, production, supply and/or distribution.

Administrative Remedies

Administrative remedies may be available to those who believe they will be adversely affected by this decision. Appeals may be made to the Office of Hearings and Appeals, Office of the Secretary, U.S. Department of Interior, Board of Land Appeals (Board) in strict compliance with the regulations in 43 CFR Part 4. Notices of appeal must be filed in this office within 30 days after publication of this decision. If a notice of appeal does not include a statement of reasons, such statement must be filed with this office and the Board within 30 days after the notice of appeal is filed. The notice of appeal and any statement of reasons, written arguments, or briefs must also be served upon the Regional Solicitor:

U.S. Department of the Interior
Office of the Solicitor, Pacific Southwest Region
2800 Cottage Way, Room E-1712
Sacramento, CA 95825-1890

The effective date of this decision and the date initiating the appeal period will be the date of approval by the authorized officer.

JOHN HODGE

Digitally signed by JOHN HODGE
Date: 2023.05.31 13:31:30 -07'00'

Assistant Field Manager- Minerals

Date

Exhibit B

United States Department of the Interior
Bureau of Land Management
Bakersfield Field Office

Environmental Assessment
Finding of No Significant Impact (FONSI)

California Resource Production Corporation
Mount Poso; 6 Applications for Permit to Drill
DOI-BLM-CA-C060-2022-0112-EA
Programmatic Project #134

BACKGROUND

On 7/15/2022, California Resource Production Corporation (CRPC) submitted six (6) Applications for Permits to Drill (APD) to drill Wells: King 1008V, King 1009V, Sarrett Fee 1118FVH, Sarrett Fee 1145LVH, Sarrett Fee 1146TVH, & Matthew Fee 1113LVH on federal mineral leases CACA004999 & CAS019301C in Sections 4 & 22, T27S, R28E, Mount Diablo Base Meridian (MDBM) in Kern County, CA. The proposed project would occur on private lands containing Bureau of Land Management (BLM) administered mineral estate within the Mount Poso Oil Field. Project implementation would include the expansion and grading of five existing well pads, the construction of one additional pad, the installation of associated power poles and pipelines, and the drilling of six new wells.

The purpose of the proposed action is to respond to the APDs submitted by CRPC to drill six new oil wells and stage associated facilities required to increase production on federal mineral leases CACA004999 & CAS019301C.

The need for the action is established by BLM's responsibility under the Mineral Leasing Act of 1920 as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980 and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 to allow reason able access to develop a federal oil and gas lease.

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA); relevant federal and applicable state laws and regulations; and BLM policy. The purpose of this document is to disclose and analyze the environmental consequences that are anticipated from the expansion and grading of five existing well pads, the construction of one additional pad, the installation of associated power poles and pipelines, and the drilling of six new wells on federal mineral leases CACA004999 & CAS019301C in the Mount Poso Oilfield. BLM will decide whether to approve, approve with conditions, or deny the six APDs submitted by CRPC.

Finding of No Significant Impact

Based upon a review of the EA and the supporting documents, I find that the project is not a major federal action and will not significantly affect the quality of the human environment. No environmental effects meet the definition of significance based on the potentially affected

environment and degree of the effects as defined in 40 CFR 1501.3(b) and furthermore, no environmental effects exceed those effects described in the Bakersfield Resource Management Plan, approved in December 2014. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared. This finding is based on consideration of the potentially affected environment and degree of effects of the project as described below:

Potentially Affected Environment

"In considering the potentially affected environment, agencies should consider, as appropriate to the specific action, the affected area (national, regional, or local) and its resources such as listed species and designated critical habitat under the Endangered Species Act. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend only upon the effects in the local area." 40 CFR 1501.3 (b)(1).

The proposed project is located on BLM administered lands in Sections 4 & 22, T27S, R28E, MDBM. The proposed activity is a site-specific action with minor localized effects on air quality and soils. The EA details the effects of the action alternatives. None of the effects identified are considered to be significant and none exceed the effects described in the Resource Management Plan.

Degree of Effects

I have considered the potential degree/severity of the impacts anticipated from the approval of the proposed action: the expansion and grading of five existing well pads, the construction of one additional pad, the installation of associated power poles and pipelines, and the drilling of six new wells on existing federal mineral leases CACA004999 & CAS019301C in the Mount Poso Oilfield. The following discussion is organized around 40 CFR 1501.3 (b)(2).

1. **Short- and long-term effects of the selected alternative.** Short-term effects include noise, air pollutant emissions, increased human activity, and the presence of heavy equipment during construction activities. Long-term effects include production of fluid mineral resources which, when burned, contribute to greenhouse gas quantities.

2. **Impacts may be both beneficial and adverse**. The selected alternative would result in emission of air pollutants, contributions to greenhouse gases, soil disturbance, and destruction of habitat for federally listed species. Contributions of air pollutants and greenhouse gas emissions are indiscernible from ambient conditions at the local, state, and national levels. Animals may alter their movement patterns to avoid the project vicinity during the days of construction, but this impact would be expected to dissipate once construction concludes. None of these impacts would be significant at the local scale or cumulatively because of the small scale of the project and Design Features/Conditions of Approval (COAs) that would reduce impacts to immeasurable levels. Air emissions would be below *de minimis* levels; soils would be preserved during construction and would be

restored to the extent possible once the proposed action concludes and listed species habitat destruction would be minimized and compensated for according to the terms of the applicable biological opinion. Beneficial impacts include the development of the fluid mineral lease including resulting royalties and employment opportunities for area residents. None of the environmental effects discussed in detail in the EA are considered significant, nor do the effects exceed those described in the Bakersfield Proposed Resource Management Plan and Final Environmental Impact Statement.

3. **The degree to which the selected alternative will affect public health or safety.** The proposed project is comparable to other similar activities and projects already undertaken on BLM-administered lands within the Bakersfield Field Office and nationwide with no unusual health or safety concerns. All operators are subject to the standards outlined in the California Occupation Safety and Health Plan, and the State must conduct inspections to enforce its standards and must operate occupational safety and health training and education programs. Also, operators must comply with federal safety regulations outlined in 43 CFR 3160 and the Onshore Oil and Gas Orders. Implementation of measures to meet these standards and regulations would minimize risks to public health and safety; therefore, any impacts to public health and safety are not considered significant.

4. **Whether the selected alternative would violate a federal, state, local, or tribal law, protecting the environment.** The alternatives do not violate any known federal, state, local or tribal law or requirement imposed for the protection of the environment. Coordination and consultation with state, local and tribal interests was conducted as described in the EA. In addition, the project is consistent with applicable land management plans, policies, and programs. The proposed action is fully consistent with the 2014 Bakersfield Resource Management Plan. The EA is in full compliance with the National Environmental Policy Act of 1969 and is consistent with the Federal Land Policy and Management Act of 1976, as amended.

Prepared by: FERNANDO BANOS Digitally signed by FERNANDO BANOS Date: 2023.05.31 06:54:28 -07'00'

Project Lead

Approved by: JOHN HODGE Digitally signed by JOHN HODGE Date: 2023.05.31 13:29:29 -07'00'

Assistant Field Manager- Minerals

Exhibit C

United States Department of the Interior
Bureau of Land Management
Bakersfield Field Office

Environmental Assessment

California Resource Production Corporation
Mount Poso; 6 Applications for Permit to Drill
DOI-BLM-CA-C060-2022-0112-EA
Programmatic Project #136

Contents

Chapter 1. Purpose and Need

PURPOSE AND NEED

On 7/15/2022, California Resource Production Corporation (CRPC) submitted six (6) Applications for Permits to Drill (APD) to drill Wells: King 1008V, King 1009V, Sarrett Fee 1118FVH, Sarrett Fee 1145LVH, Sarrett Fee 1146TVH, & Matthew Fee 1113LVH on federal mineral leases CACA004999 & CAS019301C in Sections 4 & 22, T27S, R28E, Mount Diablo Base Meridian (MDBM) in Kern County, CA. The proposed project would occur on private lands containing Bureau of Land Management (BLM) administered mineral estate within the Mount Poso Oil Field. Project implementation would include the expansion and grading of five existing well pads, the construction of one additional pad, the installation of associated power poles and pipelines, and the drilling of six new wells.

The purpose of the proposed action is to respond to the APDs submitted by CRPC to drill six new oil wells and stage associated facilities required to increase production on federal mineral leases CACA004999 & CAS019301C.

The need for the action is established by BLM's responsibility under the Mineral Leasing Act of 1920 as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980 and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 to allow reason able access to develop a federal oil and gas lease.

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA); relevant federal and applicable state laws and regulations; and BLM policy. The purpose of this document is to disclose and analyze the environmental consequences that are anticipated from the expansion and grading of five existing well pads, the construction of one additional pad, the installation of associated power poles and pipelines, and the drilling of six new wells on federal mineral leases CACA004999 & CAS019301C in the Mount Poso Oilfield. BLM will decide whether to approve, approve with conditions, or deny the six APDs submitted by CRPC.

CONFORMANCE WITH BLM LAND USE PLANS

Title 43 CFR 1610.5 requires resource management authorizations and actions conform to the approved resource management plan. The proposed action has been substantively reviewed for conformance with the Bakersfield Resource Management Plan approved on December 22, 2014. The BLM has determined the proposed action conforms with the land use plan as the proposed action is specifically provided for in the land use plan objective MM-O-1 "Facilitate reasonable, economical, and environmentally sound exploration and development of leasable minerals while minimizing impacts to other resources" (BLM, 2014; pg 75). The proposed action is located on leases CAS019301C & CACA4999 which were issued prior to the 2014 Bakersfield RMP. The 2014 Bakersfield RMP recognizes all valid existing rights (BLM, 2014; pg 1).

RELATIONSHIP TO STATUTES, REGULATIONS AND RELATED PLANS

Oil and Gas Laws and Regulations

The BLM manages lands that contain a number of extractable minerals including oil and gas, which are managed in accordance with the *Mineral Leasing Act* of 1920, as amended; the *Mining and Minerals Policy Act* of 1970; the *Federal Onshore Oil and Gas Leasing Reform Act* of 1987; 43 CFR Part 3160-Onshore Oil and Gas Operations (including Onshore Orders 1, 2, 6, and 7) and 43 CFR Part 3170-Onshore Oil and Gas Production; the *Energy Policy Act* of 2005; and other laws, regulations, orders, and also in accordance with all applicable state, county, and local laws and ordinances. BLM requires existing lessees to strictly adhere to all laws, regulations, and policies that govern oil and gas leases, while at the same time recognizing that existing leases grant the lessee certain rights. No additional requirements can be placed on an existing lessee that conflict with the rights already granted, however the lessee may elect to commit to new measures discussed with BLM.

Onshore Order No. 1 identifies the requirements necessary for approving proposed oil and gas exploration, development, and servicing of wells on all Federal and Indian oil and gas leases. This includes all components required for the management of fluid minerals including completed Form 3160-3, well plat, drilling plan, surface use plan, bonding, operator certificate, onsite inspection, processing, reclamation, and Sundry Notices. Onshore Order No. 1 also identifies processing timelines and the valid period of approvals. Onshore Order No. 2 provides requirements and standards for drilling and abandonment. 43 CFR 3173 establishes standards to ensure that oil and gas are properly and securely handled to prevent loss and theft, and to enable accurate measurement and production accountability. 43 CFR 3174 establishes minimum standards for the accurate measurement of all oil. 43 CFR 3175 establishes minimum standards for the accurate measurement of gas. Onshore Order No. 6 provides the requirements and standards for conducting oil and gas operations in an environment known to or expected to contain hydrogen sulfide (H_2S) gas. Onshore Order No. 7 provides the methods and approvals necessary to dispose of produced water associated with oil and gas operations.

Endangered Species Act

The Endangered Species Act of 1973 (ESA) requires federal agencies to complete consultation with the United States Fish and Wildlife Service (FWS) for actions "may affect" a federally listed species or designated critical habitat. The ESA also requires federal agencies to use their authorities to carry out programs for the conservation of endangered and threatened species.

Clean Air Act

The San Joaquin Valley Air Pollution Control District (SJVAPCD) has state air quality jurisdiction over the project area. The San Joaquin Valley is classified as nonattainment for ozone and $PM_{2.5}$. Section 176(c) of the Clean Air Act (CAA), as amended (42 U.S.C. 7401 et seq.) and Regulations 40 CFR Part 93, Subpart B (with respect to conformity of general Federal actions to the applicable State Implementation Plan (SIP)) apply to projects within nonattainment and maintenance areas. Under those authorities "no department, agency or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan." Under CAA 176(c) and

40 CFR Part 93 Subpart B, a federal agency must make a determination that a Federal action conforms to the applicable implementation plan before the action is taken.

National Historic Preservation Act of 1966, as amended

Section 106 of the National Historic Preservation Act (NHPA) requires agencies to make a reasonable and good faith effort to identify historic properties that may be affected by an agency's undertakings and take those effects into account in making decisions. The BLM process for implementing this NHPA requirement is set forth in the *State Protocol Agreement Among the California State Director of the Bureau of Land Management and the California State Preservation Officer and the Nevada State Historic Preservation Officer (2019)*. Pursuant to 36 CFR 800.8(a), the BLM has coordinated compliance with Section 106 and its implementing regulations at 36 CFR 800 with the steps taken to meet the requirements of the National Environmental Policy Act (NEPA).

Paleontological Resources Preservation Act (PRPA)

This Act was passed as part of the Omnibus Public Lands Management Act of 2009 as directed in 16 USC 470aaa-3 and requires Interior agencies to manage and protect paleontological resources on Federal land. This includes developing plans for the inventory, monitoring, and scientific and educational use of paleontological resources. The Act also describes criteria for issuing permits to collect and study paleontological resources on Federal land.

Clean Water Act

The Clean Water Act of 1977 establishes authority to regulate any action where pollutants may be discharged into waters of the United States. Section 303 of the federal Clean Water Act requires states to adopt water quality standards that "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses." In California, these water quality standards and the administrative policies and procedures for protecting state waters are disclosed in regional water quality control board basin plans. These basin plans establish standards for groundwater in addition to surface waters, unlike the federal program.

The Clean Water Act also established the National Pollutant Discharge Elimination System (NPDES) permit program, regulating point source discharges of pollutants into waters of the United States. Section 402 of the Clean Water Act provides that storm water discharges associated with industrial activity and construction must be authorized under a NPDES permit. Clearing, grading, and excavation projects that disturb more than one acre are required to obtain a NPDES storm water discharge permit under United States Environmental Protection Agency (EPA) regulations, though certain regulations (e.g., 40 CFR parts 122.26 (a)(2), (e)(8), and (c)(1)(iii)) codify exemptions for oil and gas operations. Section 404 of the Clean Water Act establishes the authority to issue permits for dredged or fill material.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) of 1974 regulates the nation's public drinking water supply to protect public health. SDWA authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 establishes a regulatory structure for the management and disposal of solid and hazardous wastes. Solid wastes consist of any discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. Solid wastes include both hazardous and nonhazardous waste. A waste may be considered hazardous if it is ignitable, corrosive, reactive, or contains certain amounts of toxic chemicals. Subtitle C of RCRA creates a cradle-to-grave management system for hazardous waste, governing the generation, transportation, treatment, storage, and disposal of hazardous wastes. Subtitle D regulates the management of nonhazardous solid waste, establishing minimum federal technical standards and guidelines for state solid waste plans to promote environmentally sound management of solid waste.

Oil and gas exploration and production (E&P) wastes that are intrinsically derived from primary field operations are exempt from Subtitle C hazardous waste regulations, although Subtitle D, other federal regulations, and state regulations still apply. Exempt E&P wastes include any produced fluids or waste otherwise generated by contact with the oil and gas production stream during the removal of produced water or other contaminants from the product. Some specific E&P wastes designated as exempt include produced water, drilling fluids, drill cuttings, rig-wash, work-over wastes, and well completion, treatment, and stimulation fluids. Examples of non-exempt wastes include unused fracturing fluids or acids, waste solvents, used equipment lubricating oils, and caustic or acid cleaners.

Chapter 2. Proposed Action and Alternatives

ALTERNATIVE 1: PROPOSED ACTION

California Resource Production Corporation (CRPC) has submitted six (6) Applications for Permits to Drill (APD) to drill Wells: King 1008V, King 1009V, Sarrett Fee 1118FVH, Sarrett Fee 1145LVH, Sarrett Fee 1146TVH, & Matthew Fee 1113LVH on federal mineral leases CACA004999 & CAS019301C in Sections 4 & 22, T27S, R28E, MDBM in Kern County, CA. The proposed project would occur on private lands containing BLM administered mineral estate within the Mount Poso Oil Field. Project implementation would include the expansion and grading of five existing well pads and the construction of one additional pad, the installation of associated power poles and pipelines, and the drilling of six new wells (**Figures 1, 2, 3, 4 & 5**).

Figure 1. California Resources Production Corporation
Proposed King Wells 1008V and 1009V

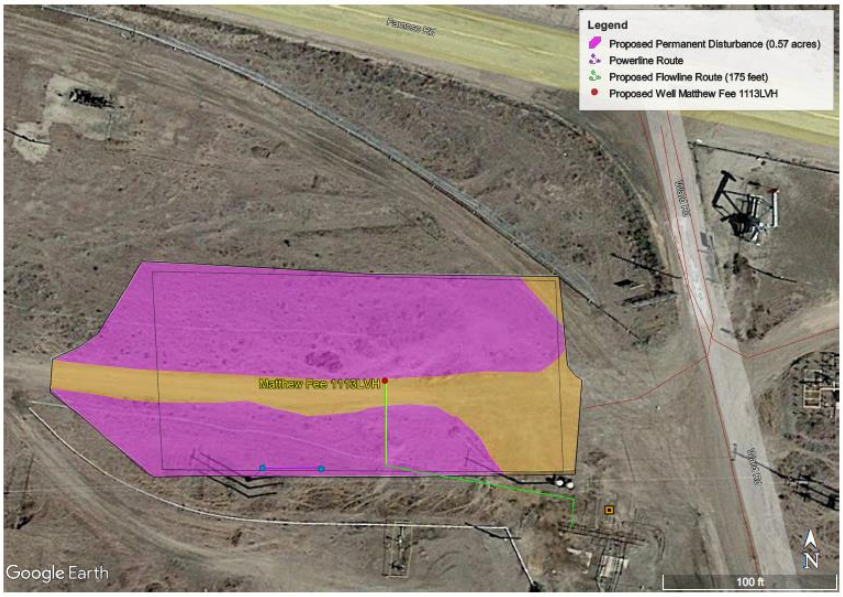


Figure 2. California Resources Production Corporation Proposed Matthew Fee 1113LVH New Well and Facilities Disturbance

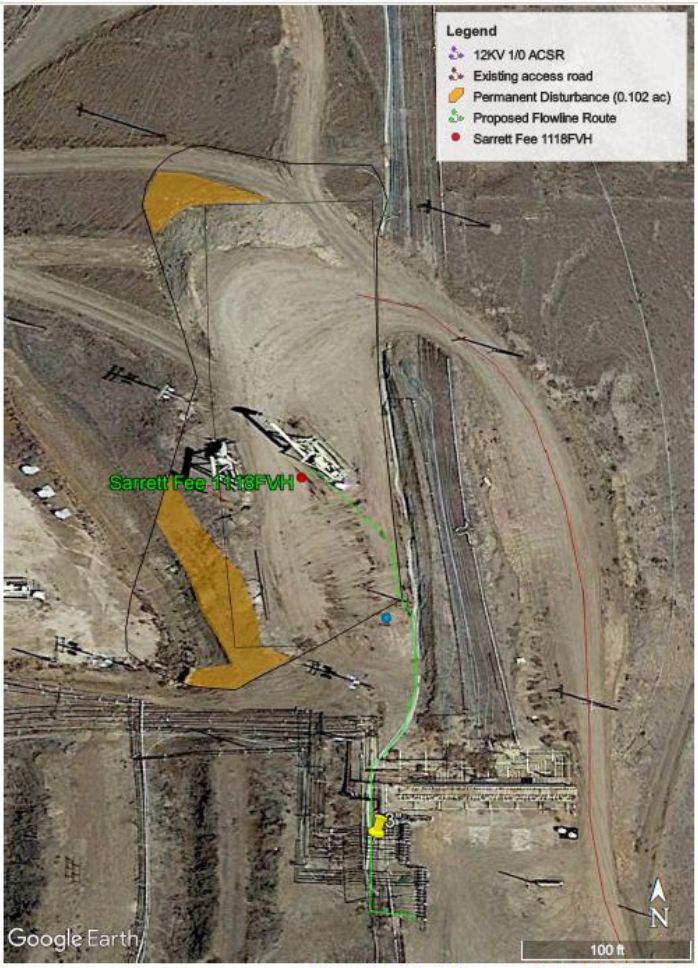


Figure 3. California Resources Production Corporation Proposed Well Sarrett Fee 1118FVH

Figure 4. California Resources Production Corporation Proposed Sarrett Fee 1145LVH New Well and Facilities

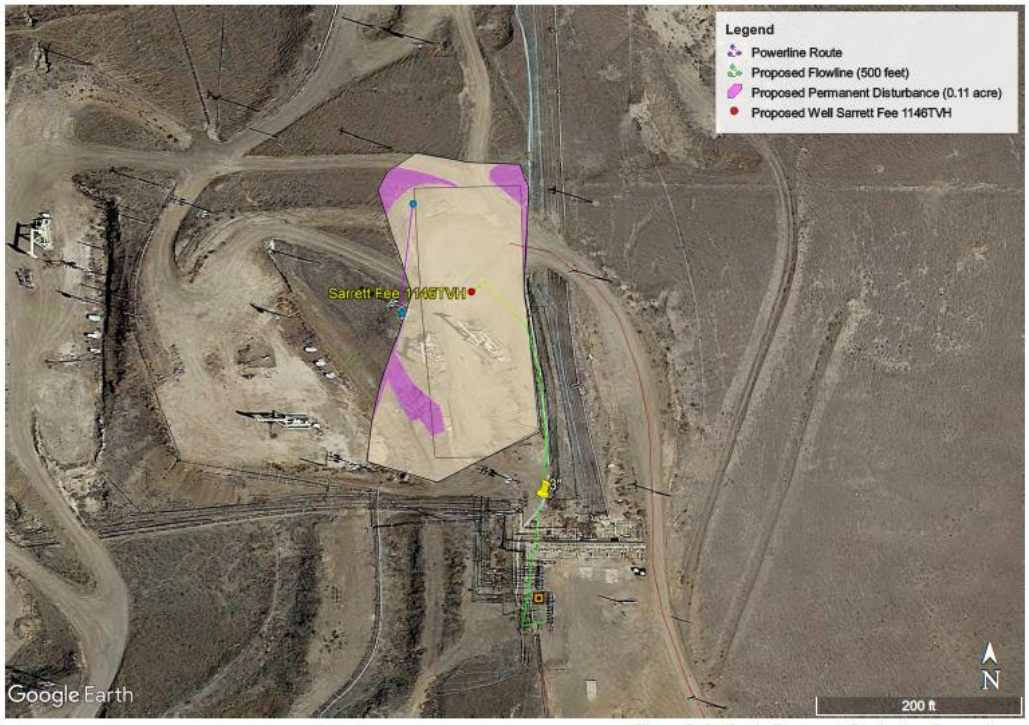


Figure 5. California Resources Production Corporation Proposed Sarrett Fee 1146TVH New Well and Facilities

As part of the proposed action, CRPC will maximize the use of existing, previously disturbed areas to minimize surface disturbance and potential impacts to listed species. Further, after drilling and completions, CRPC will reclaim unused portions of the well location which are no longer necessary for use. Final amounts of disturbance will be provided as part of the post construction compliance report.

No temporary disturbance is proposed for the wells and no off-road travel will be required to install the pipelines associated with the wells. All the proposed pipelines will be in existing pipeline corridors and all vehicles use to install the pipelines will be on existing roads.

Permanent disturbance estimates consist of the new well pad footprint and the production pipelines; unless the production pipelines are located within existing, previously disturbed areas. These portions of the project will not be restored during the interim reclamation phase of this project as they will be necessary to safely perform any routine maintenance or workovers that may be required. The well pad and pipelines, along with any other permanent disturbances, will be reclaimed at the end of the life of the well, prior to lease abandonment. No new access roads will be required for the proposed projects.

At the beginning of construction, topsoil (approximately the top four to six inches of soil) associated with new areas of disturbance will be removed from the project area and stockpiled immediately adjacent to the project site. The stockpiled topsoil will be monitored during drilling and completions activities to ensure that it is protected from wind and water erosion. After well completion, topsoil will be re-applied to the cut and fill slopes. Remaining topsoil will be stockpiled on an existing well pad or other previously disturbed surface and retained for future reclamation. Topsoil will be retained for no more than one year. If topsoil is not redistributed within one year, the operator may receive a Written Order (WO) or Notice of an Incident of Non-Compliance (INC).

New disturbance associated with installation of the production pipelines (3-inch composite lines) will consist of laying them on the surface of the ground from the well pads to the production header. The pipelines will be placed within existing pipeline corridors and the only surface excavations will be associated with pipelines crossing the existing access roads. Temporary off-road travel will not be required for the pipelines. Interim reclamation will be limited to the side slopes of the well pads, and existing access roads that are open cut to install the pipelines.

Revegetation of side slopes or areas not required for operation and maintenance (O&M) activities will be achieved using native seed supplied by the BLM. Reseeding will be performed to coincide with the rainy season (October – April). Existing access roads that are open cut to install the pipelines will be scheduled where rain is not anticipated within 24-48 hours of the proposed work. Further, trenches will not be left open greater than 48 hours and after the pipeline is installed, the trench will be backfilled and compacted for use as an oilfield lease road.

No excess dirt will be left on the side of the road or within the road; excess dirt will be compacted within the access road to become part of the active road surface. All practicable measures will be taken to minimize erosion and stabilize disturbed soils. The following types of interim stabilization

or similar methods may be used if necessary: jute netting, hydro-mulch, straw wattles, or crimped straw mulch.

Fresh water would be used for drilling, and approximately 52,500 gallons would be required per well. Water would be sourced from a station in Section 10, T29S, R27E MDBM. California Regional Water Quality Control Board issued Vintage (now CRPC) and North Kern Water District (District) an order for waste discharge (Order R5-2015-0127) that allows CRPC to provide oil field produced water from its Kern Front Oil Field to the District for irrigation and groundwater recharge purposes. Water trucks would be used to transport all water using existing access roads. Storage tanks would be used to minimize road traffic and conserve and reuse water. Following project completion, water would be removed from the project site. The average amount of water expected to be produced during the operational phase of the wells is 1200 Barrels of Water Per Day (BWPD) for each rod pump and 6000 BWPD for each Electric Submersible Pump (ESP) conversion. For the Matthew Fee and Sarrett Fee wells, the oil and water would go to the North Unit Security Treatment Facility (STF) in Section 4, T27S, R28E MDBM, for processing. For the King wells, the oil and water will go to the South Unit Security Treatment Facility in Section 21, T27S, R28E MDBM. Thereafter, the water would be sent to the water disposal wells Glide WD 453, Glide WD 464, and Glide WD 473. The water disposal project and the disposal wells are authorized by an Underground Injection Permit issued by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (CDOGGR), now named California Geologic Energy Management Division (CalGEM).

Because this is a closed loop system, a drilling sump would not be used for this project. Non-hazardous, water-based mud would be used in drilling operations. All cuttings and drilling fluid would be collected in an enclosed temporary tank on-site and would be disposed of at the Avenal, California landfill, a municipal solid waste landfill operating under a permit issued by the State for the disposal of solid waste.

Mitigating for adverse effects to paleontological resources is a management practice that preserves resources and accommodates development. For PFYC 3, 4, 5, and U classified geological formations, this mitigation is required for all project activities on BLM surface or private lands for which federal paleontological compliance requirements have not been waived. Paleontological resources are considered a part of the surface estate and therefore belong to the surface owner. Under current BLM policy, the surface owner may elect to waive monitoring and mitigation recommendations.

CRPC proposes to use current best available technologies to drill and complete the proposed well; modern controls and monitoring would be in place to prevent failures of mechanical well integrity. All aspects of well completions and design are conducted according to American Petroleum Institute standards whereby specifications and recommended practices are detailed to ensure mechanical well integrity. For these reasons, well failures are not anticipated in the new wells proposed in the Mount Poso Oilfield. CRPC has stated that there is no intention (and is there no authorization to conduct) well stimulation activities regulated by California Senate Bill No. 4 (hydraulic fracturing, matrix or fracture acidization) on the proposed wells.

Design Features

The following design features are part of the proposed action:

CRPC shall comply with all relevant federal, and applicable tribal, state, and local laws during project implementation.

Biological Resources

This project will be assigned as project number 136 under the 2017 Oil and Gas Programmatic Biological Opinion (08ESMF00-2016-F-0683). The 2017 Oil and Gas Programmatic Biological Opinion provides take coverage for authorization of individual projects occurring on surface and subsurface lands administered by the BLM in Kern County (among others) that disturb less than 10 acres of habitat or that encompass linear actions less than 10 miles long. This project occurs in Kern County and disturbs 1.092 acres of habitat,, thus satisfying the requirements for coverage under the 2017 Oil and Gas Programmatic Biological Opinion (PBO). Compliance with the Project Specific Provisions (Attachment 1) of this Opinion is required. The PBO requires species compensation acreage for each acre of disturbance. A preliminary estimate of compensation acreage is 3.276 compensation acres (1.092 permanent acres compensated at 3:1= 3.276).

Incorporate All of the "Avoidance & Mitigation Actions" recommended by consulting biologist Kimberly Fiehler (West Kern Environmental Consulting, LLC) in her May 17, 2022, Sensitive Species Review Forms are incorporated into the project design:

1. A biological monitor will be present during initial ground disturbance and will be on-call and notified if listed species are observed in the project area subsequent to the initial ground disturbance.
2. A Threatened and Endangered Species training session will be given to construction personnel prior to project implementation.
3. Project site boundaries shall be clearly delineated by stakes, flagging and/or rope to minimize inadvertent degradation or loss of adjacent habitat during well pad and pipeline installation activities.
4. The qualified biologist shall review and approve any off-road travel areas required for the pipeline and power line construction.
5. All construction pipes, culverts, or similar structures stored at the construction site overnight having a diameter of four (3.5) inches or greater shall be inspected thoroughly for wildlife species before being buried, capped, or otherwise used or moved in any way. Pipes laid in trenches overnight shall be capped. If during construction a wildlife species is discovered inside a pipe, that section of pipe shall not be moved or, if necessary, moved only once to remove it from the path of construction activity, until the wildlife species has escaped.
6. A maximum speed limit of 10 mph will be enforced to avoid incidental take of wildlife along roadways.
7. All excavated steep-walled holes or trenches in excess of three feet in depth left open for more than one (1) workday shall be provided with one or more escape ramps constructed of earth fill or other material to prevent entrapment of endangered species or other animals.

Ramps shall be located at no greater than 1,000-foot intervals (for pipelines etc.) [or greater than a 45-degree angle in steepness]. Trenches shall be inspected for entrapped wildlife each morning prior to onset of construction activities and immediately prior to the end of each working day. Before such holes or trenches are filled, they shall be inspected thoroughly for entrapped animals. Any animals discovered shall be allowed to escape voluntarily without harassment before construction activities resume or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded.

8. All food related trash such as wrappers, cans, bottles, and food scraps shall be disposed of into closed containers and be removed daily from the site.
9. Feeding of wildlife is strictly prohibited.
10. CRPC staff and/or its contractors should designate a specific individual as a contact representative between CRPC and all applicable federal, state, and local agencies to oversee compliance with these avoidance mitigation measures.
11. Firearms are prohibited on site.
12. Pets are prohibited on site.
13. Follow BLM General Guidelines for Conserving Habitat and Minimizing Project Impacts.

Cultural Resources

In the event of inadvertent discovery of cultural resources during project implementation, the BLM Field Office Cultural Staff and Field Manager (661-391-6000) shall be immediately notified by personnel responsible for the project. All work at the site of discovery, and in any other locations where damage to the cultural resource could occur, shall also cease until written approval to proceed is issued by the BLM.

If human remains are inadvertently discovered on BLM, all activity will immediately cease surrounding the unanticipated discovery. The holder will ensure that the discovery is secured and protected and will immediately notify the BLM Field Manager (661-391-6000). The BLM will adhere to current regulations regarding the treatment of human remains (Native American Graves Protection and Repatriation Act, 43 CFR 10). Access and use of the area can proceed with written approval from the Field Manager once the appropriate level of review has been determined and completed.

Paleontological Resources

This Project is located on private surface (split estate) lands. Pursuant to PRPA, federal paleontological compliance requirements for private land projects conducted under the Mineral Leasing Act are subject to the discretion of the surface landowner. For the CACA004999 (Rench Lease) lease wells (King 1008V & King 1009V), CRPC and the BLM has contacted the private owner and they have waived paleo monitoring for this lease. The surface owner has been contacted by BLM previously (2017 & 2018) regarding APD projects within the Mt. Poso Oil Field, CAS019301C (Alta Vedder Lease) Lease (Sarrett Fee 1118FVH, Sarrett Fee 1145LVH, Sarrett Fee 1146TVH, & Matthew Fee 1113LVH), and the potential impact of APD projects to paleontological resources, as well as the BLM's recommendations for monitoring and mitigation to reduce the level of impacts to paleontological resources.

The BLM recommends CRPC, the surface owner for CAS019301C, to pursue the following two strategies CRPC previously elected to follow on private surface leases owned by CRPC in the Mt.

Poso Oil Field. The strategies are detailed below, as well as in the project design features. Any paleontological specimen recovered as a result of this mitigation are the property of the surface landowner and may be stored or handled at the discretion of the surface landowner.

a. The following mitigation and monitoring measures are excerpted from a letter to the BLM dated October 9, 2017, regarding Paleontological Resource Compliance Letter for the Mount Poso Oil Field, Kern County, California. This plan is designed to reduce project effects on paleontological resources to below the level of significance pursuant to NEPA.

    1) All construction personnel will be trained on the importance of paleontological resources and to notify CRPC's Health, Safety, and Environment Department of the discovery of any archeological, historical, or vertebrate fossil found. All work will stop within 50' of the discovery until a paleontologist reviews the discovery. Construction personnel shall be instructed that unauthorized collection or disturbance of fossils is unlawful.

    2) Kern County requires a mitigation fee for paleontological resources to be paid for wells that use enhanced oil recovery (EOR) methods. This fee is paid to the Buena Vista Museum to fund curation of paleontological resources and provide educational support regarding the paleontological history of the region (Mitigation Measure 4.5-3, Kern County Zoning Ordinance). Since no EOR is proposed nor authorized, this is not an issue.

<u>Construction and Interim Reclamation</u>

All permanent above-ground structures (e.g., production equipment, etc.) not subject to safety requirements shall be painted to blend with the natural color of the landscape. The paint used will be a color which simulates "Standard Environmental Colors." The colors selected for the project location are Covert Green or Carlsbad Canyon.

At the beginning of construction, any topsoil (approximately the top four-six inches of soil) shall be removed from the project area and stockpiled on an existing pad or previously disturbed surface near the project site. After well completion, topsoil will be re-applied to the cut and fill slopes, as well as the sump (if required). "Well completion" is a technical term used to describe the final phase of well drilling; "well completion" is not synonymous with the final phase of project implementation. Prior to applying topsoil to the sump (if required), will be cleaned, ripped to a minimum depth of 12 inches, and re-contoured to match the surrounding topography. Remaining topsoil will be stockpiled on an existing well pad or other previously disturbed surface and retained for future reclamation. Topsoil will be retained for no more than one year. If the topsoil is not redistributed within one year, the operator may receive a WO or INC.

All practicable measures will be taken to minimize erosion and stabilize disturbed soils. The following types of interim stabilization or similar methods may be used if necessary: jute netting, hydro-mulch, straw wattles, or crimped straw mulch.

No fencing will be used for cut and fill slopes. However, fencing and signage may be used to protect the reclaimed sump (if required) from unauthorized disturbance. Fencing may remain until the reclaimed sump has achieved revegetation goals and has been released by the BLM.

Management of Noxious Weeds

A site-specific weed control Environmental Assessment (EA) and a Pesticide Use Proposal (PUP) must be completed before any use of pesticides on BLM lands. This can be a lengthy process and requires specific information, public notification, and review by the BLM State Office. Currently, the applicant does not have these approvals in place. Therefore, no herbicide treatment is authorized at this time.

Final Reclamation

Disturbed lands shall be re-contoured to conform with existing undisturbed topography unless the BLM determines that re-contouring would result in negative impacts to special status species. No depressions shall be left that trap water or form ponds. All portions of final reclamation may be subject to additional cultural resources and paleontological inventory and may require a permit. The reclaimed landscape shall have characteristics that approximate the visual quality of the adjacent area and consider location, scale, shape, color, and orientation of major landscape features and meet the needs of the planned post disturbance land use.

Final reclamation shall specifically achieve the following:

1. The reclaimed area shall be stable and exhibit none of the following characteristics:
    a. Large rills or gullies (greater than 6 inches deep).
    b. Perceptible soil movement or head cutting in drainages.
    c. Slope instability on, or adjacent to, the reclaimed area in question.
2. The soil surface must be stable and have adequate surface roughness to reduce runoff and capture rainfall and snow melt. Additional short-term measures, such as the application of mulch, shall be used to reduce surface soil movement.
3. Vegetation production and species diversity (including shrubs) shall approximate the surrounding undisturbed area (50-150% of the adjacent species composition and cover). The vegetation shall stabilize the site and support the planned post disturbance land use, provide for natural plant community succession and development, and be capable of renewing itself. This shall be demonstrated by:
    a. Successful onsite establishment of species included in the planting mixture or other desirable species.
    b. Evidence of vegetation reproduction, either spreading by rhizomatous species or seed production.
4. Habitat Restoration
    a. Restoration will be required on unused portions, including abandoned, unused, or unnecessary roads, of the project area or oil and gas lease when deemed necessary by the BLM to maintain or improve habitat values. Restoration will be required when reserve area (Red Zone) and habitat corridor (Green Zone) limits are exceeded and when a project or lease is abandoned. Restoration activities will be supervised by an onsite monitoring biologist.
    b. The following are examples of actions that may be required as part of restoration:

i. All trash will be removed from the site and disposed of properly.
ii. All cement, asphalt, and oil-contaminated soils will be removed from the site and disposed of properly.
iii. All pipelines and other oilfield infrastructure no longer in use will be removed from the site and disposed of properly.
iv. Topographic contours will be restored to the maximum extent possible.
v. Non-compacted soils or areas previously deep ripped will be disced to a depth of approximately 8 inches.
vi. Compacted sites will be deep ripped to a depth of 12 to 18 inches.
vii. Slopes greater than 30 per cent will be treated by erosion control methods such as discing along the contour, imprinting, mulching, or installing wattles.
viii. Sites will be seeded using methods such as drill or broadcast seeding with a site-appropriate seed mix, approved by the BLM Botanist. Exact seeding mixes and rates will depend on the site characteristics, the species chosen, and the current availability of native seed. Seed mixes will include dominant shrubs and native grasses and herbs compatible with the adjacent plant community. The best time for seeding is generally late summer to early fall prior to the onset of the rainy season.
ix. Sites will be considered restored when it can be documented that they support functional, native habitat. Evidence of attainment of this goal will be provided by the project applicant. Restoration in drainages, streambeds, and similar habitats where water is a substantial component may require conformance with conditions of a CDFW Streambed Alteration Agreement or other state or local permit. Demonstration of restoration may include documentation of:
    1. Visual continuity or similarity with adjacent native, undisturbed habitat or a designated reference site.
    2. Topography that follows natural contours and allows for the natural flow of water across the landscape.
    3. Indiscernible boundary lines or areas between the disturbed and undisturbed areas.
    4. Presence of habitat that supports threatened and endangered species.
    5. Vegetation community composition within the normal or desired range. Ratios of native and non-native plants within normal or desired parameters. Presence and abundance of reproducing plants. Presence and abundance of biological soil crusts.
    6. Evidence or presence of animals or animal sign on the site. Presence and abundance of desired species. Evidence, presence, and abundance of reproducing species.
    7. Evidence of species diversity for both plants and animals.
    8. Evidence of soil stability (minimal erosion).
    9. Absence of signs of vehicle or other trespass. Absence of trash and contaminated soils.

ALTERNATIVE 2: NO ACTION

Under this alternative, BLM would not approve the six APDs submitted by CRPC. By denying the applications, the federal lessee/operator would be denied the opportunity or right to develop and produce the federal mineral estate. Not approving this action would not affect demand for petroleum products. Any new oil and gas development required to meet demand would be carried out by drilling a well or wells in some other location.

Chapter 3. Affected Environment

This chapter briefly describes the physical and regulatory environment for elements that may be affected by the proposed action.

The following elements of the human environment were considered but determined to be either not present or unaffected by the proposed action and will therefore not be addressed further in this analysis:

- This project location does not occur within a designated Area of Critical Environmental Concern or within National Conservation Lands.
- The project does not contain essential fish habitat, and there are no wetlands or riparian zones in the project area.
- The project would not affect minority or low-income populations would be directly affected in the vicinity of the proposed project.
- The proposed project would not affect recreational experience as it occurs within a BLM administered oil and gas lease that does not currently attract recreational use, nor is it anticipated to attract significant recreational use in the future.
- Visual resources would not be impacted since the project occurs within a Class IV Visual Resource Management area that is not visible from any main access road or highway and is not likely to attract attention.
- Pursuant to Section 106 of the National Historic Preservation Act, BLM Archaeologists conducted an assessment to determine whether the proposed undertaking would adversely affect historic properties. Assessment included a review of Bakersfield Field Office cultural program records. A Class III cultural resources inventory was previously conducted in 2014, 2016, and 2018 which included the Area of Potential Effect (APE) for the six proposed well locations (BLM Cultural Resource Inventory Report # 6000-2014-64, 6000-2016-10, & 6000-2018-063). No cultural resources were identified, and no historic properties, were recorded within the current project APE; therefore, there will be no effect to historic properties as a result of the proposed action.
- Two certified letters containing maps and a description of potential development activities that could occur within an area that includes the project area was mailed to Native American Tribes affiliated with the project area as part of the proposed project in 2020. For the first letter, two recipients responded that they were unaware of any places of traditional cultural or religious importance in the direct area of the Rench lease, though there are traditional places within the general vicinity of the Mount Poso Oil Field. The final recipient did not respond to our inquiry regarding consultation on the proposed well or project area (Tribal Notification Letter #21-01). For the second letter, no recipient

provided a response to our inquiry regarding consultation on the proposed wells or project area for the Alta Vedder wells (Tribal Notification Letter #21-03).

Issues for detailed analysis

- How would emissions generated by construction activities (e.g., generation of dust, burning of diesel) and subsequent operation of the well impact air quality?
- How would emissions generated by construction activities, subsequent operation of the well, and downstream use of the produced petroleum contribute to increases in Green House Gases (GHGs) (CO_2e) impact climate change?
- How would construction activities (e.g., drill rig noise, vehicle traffic), ongoing operations (e.g., vehicle traffic) and habitat disturbance impact threatened and endangered species?
- How would construction activities (e.g., grading, drilling) impact soil productivity and erodibility?
- How would drilling through aquifers impact drinkable groundwater? How would construction and operations activities (potential for erosion, sediment carry, spills and leaks) impact surface water? How would the use of water for drilling and dust abatement impact availability of fresh water for other beneficial uses?

Air Quality

The proposed project area is located in Kern County, California, and within the San Joaquin Valley Air Basin. At the state level, air regulatory duties lie with the California Air Resources Board (CARB) and at the federal level with the EPA, Region IX. In California, oversight, rulemaking, and enforcement authority for stationary source air quality matters has been delegated to county or regional air districts. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has jurisdiction over the project area. The BLM analyzes air resources impacts as part of NEPA analysis to inform approvals of projects on Public Lands and to demonstrate compliance with Clean Air Act (CAA) requirements to analyze all federal actions for conformity with State or Tribal air quality plans.

The federal Clean Air Act (CAA), as amended, and the California Clean Air Act (CCAA) contain the primary provisions relating to air quality. Provisions of the federal CAA that apply to BLM actions include the National Ambient Air Quality Standards (NAAQS), nonattainment area designation, the development of state implementation plans (SIPs), prevention of significant deterioration (PSD), air toxics, and federal conformity. The EPA, CARB, and regional air districts have issued rules to implement federal and state Clean Air Acts.

EPA has identified seven criteria pollutants as indicators of air quality and has established for each of them a threshold concentration above which adverse effects on human health and the environment may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS) (https://www.epa.gov/criteria-air-pollutants). One set of limits (primary standard) protects health; another set of limits (secondary standard) is intended to prevent environmental and property damage. Under the federal CAA, the EPA has established NAAQS for: ozone, respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide, nitrogen dioxide, lead, and sulfur dioxide. California has established state Ambient Air Quality Standards for the same criteria pollutants, plus an additional three pollutants (visibility reducing

particulates, sulfates, and hydrogen sulfide). A geographic area that meets the primary standard is called an attainment area; areas that do not meet the primary standard are called nonattainment areas (https://www.epa.gov/clean-air-act-overview). There are many criteria pollutant sources in the SJVAPCD. Table 3.1 presents several significant source categories with their percentage contributions to total criteria pollutant emissions in 2017.

Table 3.1 - Criteria Pollutant Emissions in SJVAPCD - 2017

Source	Total (tons per day)	% of Total
District Wide – All Sources	4,534.4	
Wildfires	2,271.5	50.1%
Mobile (Cars, Trucks, Planes, Construction Equipment)	791.1	17.4%
Farming Operations	195.8	4.3%
Fugitive Windblown Dust	50.8	1.1%
Residential Fuel Combustion	38.3	0.8%
Oil and Gas Production	24.4	0.5%

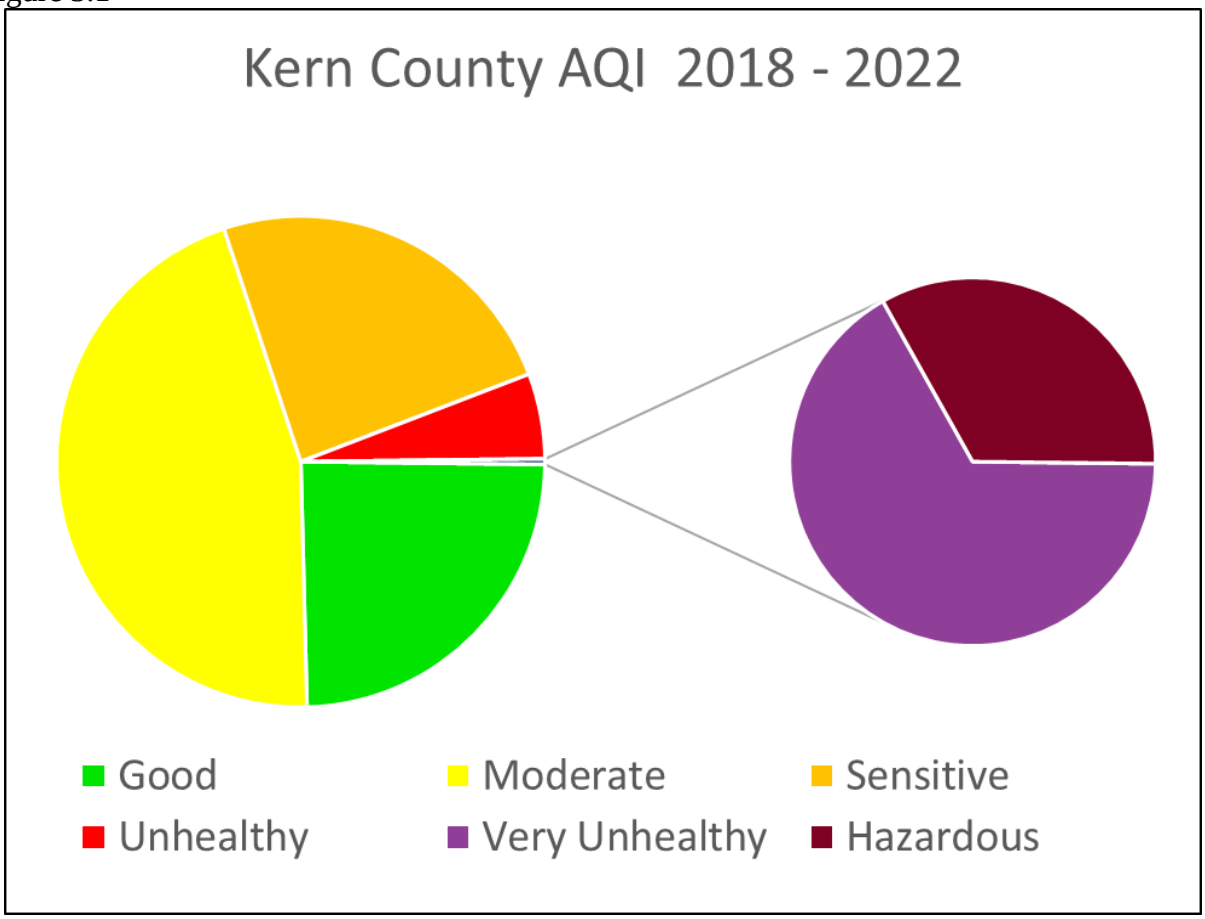
The SJVAPCD operates and maintains a network of air monitoring sites throughout the eight counties of the San Joaquin Valley. A total of 24 sites are currently operated directly by the District or in collaboration with the California Air Resources Board (ARB). In addition, ARB also independently operates air monitoring stations in the Valley, along with additional sites operated by the National Park Service and tribal nations. In total, 38 air monitoring sites are currently in operation in the San Joaquin Valley. The EPA air quality index (AQI) is used for reporting criteria pollutant levels to the public (https://www.airnow.gov/). It is calculated based on pollutant concentration monitoring performed at many stations located throughout the country and is estimated using computer modeling for areas in between monitoring stations. The AQI is one way to evaluate how clean or polluted an area's air is and whether associated health effects might be a concern. The EPA calculates a daily AQI for each monitored area based on local air monitoring data. When the AQI value is between 0 and 50 (green), air quality is categorized as "good" and criteria air pollutants pose little or no risk. AQI between 51 and 100 (yellow) indicates moderate air quality posing little risk. An AQI of 100 indicates at least one pollutant is at the NAAQS concentration threshold. AQI values between 101 and 150 (orange) indicates a pollutant concentration above the NAAQS and air quality that might be unhealthy for sensitive groups. AQI values higher than 150 means generally unhealthy (red), very unhealthy (purple), or hazardous (maroon) air quality. 5-year average AQI data representative of Kern County for the years 2017 – 2021 is presented in Table 3.2. Figure 3.1 shows the relative percentage of days with each AQI rating over the 5-year period.

Table 3.2 - Kern County Air Quality as shown by AQI

5-Year Avg Good Days per year		5-Year Avg Moderate Days per year		Avg Unhealthy for Sensitive Days per year		5-Year Avg Unhealthy Days per year		5-Year Avg Very Unhealthy Days	5-Year Avg Hazardous Days
81.6	24.5%	151.4	45.5%	81.2	24.4%	18.8	5.6%	0.8	0.4

Source: EPA Annual AQI Summary Data by County. https://aqs.epa.gov/aqsweb/airdata/download_files.html#Annual

Figure 3.1



The data show that air quality in Kern County exceeds NAAQS on almost one-third of days and that air quality presents some health risk to residents. Specifically, air quality standards for $PM_{2.5}$ and ozone have been exceeded in the San Joaquin Valley air basin due to local and transported pollutants. This has resulted in the current designation of the air basin as a federal non-attainment area for $PM_{2.5}$ and ozone under the NAAQS. The air basin has recently been designated as a federal maintenance area for PM_{10}. Ozone is created in the atmosphere by a reaction involving nitrogen oxides (NOx), VOCs, and sunlight. Based on the EPA 2010 designations, the primary pollutants of concern for the Project area are NOx and VOC (ozone), PM_{10}, and $PM_{2.5}$. The remaining criteria pollutants are either unclassified or in attainment with the NAAQS.

The proposed project area is within the EPA Pacific Southwest Region 9 Planning Area; a State Implementation Plan (SIP) has been prepared for the planning area, which identifies sources of emissions and control measures to reduce emissions. In 2016, CARB updated the State Strategy for achieving emissions reductions toward bringing these areas into attainment with federal standards for ozone and $PM_{2.5}$. A San Joaquin Valley Supplement to the 2016 State Strategy was adopted in October 2018. The SIP mainly addresses stationary sources that have been identified as major contributors affecting regional air quality, such as power plants, facilities, etc.

District air quality plans that have been adopted and are relevant to the proposed Project include the *SJVAPCD 2016 Ozone Plan*, *2013 Plan for the Revoked 1-Hour Ozone Standard*, *2022 Plan for the 2015 8-Hour Ozone Standard*, *2018 $PM_{2.5}$ Plan*, and *2007 PM_{10} Maintenance Plan*. EPA reclassified the District to Serious $PM_{2.5}$ nonattainment, effective December 2021. Following the reclassification, the District must submit a Serious Plan to EPA by December 31, 2023, with some initial components due by June 27, 2023. These plans outline the strategy for achieving federal air quality standards by specific dates and identify control measures to reduce criteria pollutant emissions. Control measures identified in the *2007 Ozone Plan* reduce ozone precursor emissions, NOx and Volatile Organic Compounds (VOCs). Particulate matter attainment strategies include control measures to reduce dust from unpaved roads and construction activities.

CAA regulations also address the release of hazardous air pollutants (HAPs): chemicals that are known or suspected to cause cancer or other serious health effects, such as reproductive effects, birth defects, or adverse environmental effects. In addition to federally listed HAPs, California also regulates State-identified Toxic Air Contaminants (TACs). HAPS and TACs are referred to as air toxics. EPA currently lists 189 compounds as HAPs, some of which, such as benzene, toluene, and formaldehyde, can be emitted from oil and gas development operations. NAAQS have not been set for HAPs; rather HAP emissions are controlled by source type- or industrial sector-specific regulations. Hydrogen sulfide (H_2S) gas is not regulated under the NAAQS or as a HAP. However, it is known to be hazardous, and is monitored for health and safety at oil and gas sites. According to the EPA AirToxScreen mapping tool (https://epa.maps.arcgis.com/apps/MapSeries/index.html?appid=e5a7e59018c7424eaddcb64b31ba4a41) most of Kern County, including the locations of the proposed wells, had a HAP cancer risk between 5 and 25 in a million in 2019. Risks were somewhat higher (25 to 50 in a million) in the Bakersfield metropolitan area. The SJVAPCD reported in 2022 that based on the latest California Toxics Inventory (CTI), 52% of air toxic emission in the district come from mobile sources such as cars and trucks. 14% of all air toxics in the Valley are emitted from stationary sources of pollution, a category which includes emissions from all the oil and gas facilities in the district.

Applicable SJVAPCD Rules to Implement Air Quality Plans

Once air quality attainment demonstration Plans are adopted, the reductions necessary to meet the respective reduction mandates contained in the Plan(s) are achieved through prohibitory rules implemented through the SIP. Compliance with applicable Rules, Regulations, and land use and zoning requirements ensures continued movement towards achieving the SJVAPCD attainment goals. Examples of SJVAPCD rules that may be applicable to the proposed project are described below.

> *Rule 2280 (Portable Equipment Registration):* Certain portable emissions units would be required for well drilling, service or workover rigs, pumps, compressors, generators, and field flares.
>
> *Rule 4101(Visible Emissions):* The purpose of this rule is to prohibit the emissions of visible air contaminants to the atmosphere.

Rule 4401 (Steam-Enhanced Crude Oil Production Wells): The purpose of this rule is to limit the VOC emissions from steam-enhanced crude oil production wells.

Rule 4402 (Crude Oil Production Sumps): The purpose of this rule is to limit VOC emissions from sumps.

Rule 4623 (Storage of Organic Liquids): The purpose of this rule is to limit VOC emissions from the storage of organic liquids.

Regulation VIII (Fugitive PM_{10} Prohibitions): The purpose of Regulation VIII is to reduce ambient concentrations of particulate matter (PM_{10}) by requiring actions to prevent, reduce, or mitigate anthropogenic fugitive dust emissions. Regulation VIII rules pertinent to the proposed project include, but are not limited to, the following:

Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities): This rule limits fugitive dust emissions (PM_{10}) from construction, demolition, excavation, extraction, and other earthmoving activities. This rule applies to any such activity and other earthmoving activities, including, but not limited to, land clearing, grubbing, scraping, travel on-site, and travel on access roads to and from the site.

Rule 8031 (Bulk Materials): The purpose of this rule is to limit fugitive dust emissions from the outdoor handling, storage, and transport of bulk materials.

Conformity Determination

The classification of any area as a federal nonattainment and/or maintenance area brings an additional requirement for federal agencies. Section 176(c) of the CAA, as amended (42 U.S.C. 7401 et seq.), and regulations under 40 CFR, Part 93, Subpart B, state that "no department, agency or instrumentality of the federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan." This means that under the CAA 176(c) and 40 CFR, Part 93, Subpart B (conformity rules), federal agencies must make a determination that proposed actions in federal nonattainment areas conform to the applicable EPA approved implementation plans (if pertinent) before the action is taken.

Climate Change

Climate change is a global process that is affected by the sum total of GHGs in the Earth's atmosphere. The incremental contribution to global GHGs from a single proposed land management action cannot be accurately translated into its potential effect on global climate change or any localized effects in the area specific to the action. Currently, global climate models are unable to forecast local or regional effects on resources as a result of specific emissions. However, there are general projections regarding potential impacts on natural resources and plant and animal species that may be attributed to climate change resulting from the accumulation of GHG emissions over time. GHGs influence the global climate by increasing the amount of solar energy retained by land, water bodies, and the atmosphere. GHGs can have long atmospheric lifetimes, which allows them to become well mixed and uniformly distributed over the entirety of the Earth's surface no matter their point of origin. Therefore, potential emissions resulting from

the proposed action can be compared to state, national and global GHG emission totals to provide context of their potential contribution to climate change impacts.

Further discussion of climate change science and predicted impacts, as well as the reasonably foreseeable and cumulative GHG emissions associated with BLM's oil and gas leasing actions, are included in the *BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends* (BLM, 2022) (hereinafter referred to as the Annual GHG Report). This report presents the estimated emissions of greenhouse gases attributable to development and consumption of fossil fuels produced on lands and mineral estate managed by the BLM. The Annual GHG Report is incorporated by reference as an integral part of this analysis and is available at https://www.blm.gov/content/ghg/2021.

Table 3.3 shows the total estimated GHG emissions from fossil fuels at the global, national, and state scales over the last five years. Emissions are shown in megatons (Mt) per year of carbon dioxide equivalent (CO_2e). Chapter 3 of the Annual GHG Report contains additional information on GHGs and an explanation of CO_2e. State and national energy-related CO_2 emissions include emissions from fossil fuel use across all sectors (residential, commercial, industrial, transportation, and electricity generation) and are released at the location where the fossil fuels are consumed.

Additional information on current state, national, and global GHG emissions as well as the methodology and parameters for estimating emissions from BLM fossil fuel authorizations and cumulative GHG emissions is included in the Annual GHG Report (see Chapters 4, 5, and 6).

Table 3.3 - Global and U.S. GHG Emissions 2015 - 2020 (Mt CO2/yr)

Scale	2016	2017	2018	2019	2020
Global	36,465.6	36,935.6	37,716.2	37,911.4	35,962.9
U.S.	5,077.0	5,005.5	5,159.3	5,036.0	4,535.3
California	396.3	423.6	388.9	386.5	NA

Source: Annual GHG Report, Chap. 6, Table 6-1 (Global and U.S.) and Table 6-3 (State).
Mt (megaton) = 1 million metric tons
NA = Not Available

The continued increase of anthropogenic GHG emissions over the past 60 years has contributed to global climate change impacts. A discussion of past, current, and projected future climate change impacts is described in Chapters 8 and 9 of the Annual GHG Report. These chapters describe currently observed climate impacts globally, nationally, and in each State, and present a range of projected impact scenarios depending on future GHG emission levels. These chapters are incorporated by reference in this analysis.

Applicable Federal, State, and Local Regulations to Reduce Impacts of Oil and Gas Production on Climate Change

On April 17, 2012, EPA issued Final Air Rules to reduce harmful air pollution from the oil and natural gas industry. In addition, EPA issued final updates to its 2012 VOC performance standard for storage tanks used in crude oil and natural gas production and transmission on August 5, 2013.

In addition, on May 12, 2016, EPA issued final rules to reduce emissions of methane, smog-forming volatile organic compounds, and toxic air pollutants from new, reconstructed, and modified oil and gas sources; these final rules established updates to the New Source Performance Standards (NSPS) and the Source Determination Rule. The EPA also requires reporting of greenhouse gases from large GHG emissions sources in the United States through the Greenhouse Gas Reporting Program (GHGRP) (EPA, 2020).

The California Legislature passed the California Global Warming Solutions Act of 2006 [Assembly Bill 32 (AB 32)], creating a comprehensive, multi-year program to reduce greenhouse gas emissions in California. AB 32 requires the reporting of GHGs by major sources, applicable to industrial facilities, fuel suppliers, and electricity reporters. In 2005 and 2015, California Governors issued Executive Orders establishing mid-term and long-term GHG reduction targets for California of 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050 (CARB, 2020).

In August 2008, San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) adopted the Climate Change Action Plan (CCAP), which directed the District to develop guidance to assist Lead Agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG emissions on global climate change (SJVAPCD, 2016). SJVAPCD has developed *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA and District Policy Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA*, intended to be applied to CEQA analysis. Although these policies are only available for CEQA analyses, the air district guidance may be generally applied by land-use agencies for reference. BLM concludes that the SJVAPCD requirement to quantify GHG emissions and to implement SJVAPCD Best Performance Standards to reduce GHG emissions would occur at the APD or Sundry stage, to be analyzed in a site-specific NEPA analysis. Therefore, this environmental assessment includes an analysis of GHG emissions for the proposed action.
Arctic Seaed, or District

Biological Resources

The proposed project would occur on private lands not identified in the habitat conservation strategy for the recovery of listed species in the southern San Joaquin Valley. The nearest BLM lands included in the habitat conservation strategy, also referred to as “Conserved Lands,” would be approximately 7 miles from the project location.

The Conserved Lands goal is to maintain suitable amounts of habitat largely undisturbed by development activities. Limiting the amount of habitat (and ground) disturbance allows sufficient habitat to remain intact, keep ecosystem processes functioning properly, and connect viable species populations across the landscape (see Bakersfield Proposed RMP/Final EIS, Appendix B, pp. 771-775). Conserved Lands are subdivided into two components: reserve areas (red zones) and habitat corridors (green zones). Reserve areas are managed with a 10% disturbance limit and habitat corridors are managed with a 25% disturbance limit.

Federally listed plant species in the southern San Joaquin Valley include Kern mallow (*Eremalche kernensis*), San Joaquin woolly-threads (*Monolopia congdonii*), California jewelflower (*Caulanthus californicus*), and Bakersfield cactus (*Opuntia basilaris* var. *treleasei*). California jewelflower is not known to naturally exist in Kern County, and Bakersfield cactus is endemic to a limited area of central Kern County in the vicinity of the city of Bakersfield. Federally listed animal species include San Joaquin kit fox (*Vulpes macrotis*), blunt-nosed leopard lizard (*Gambelia sila*), giant kangaroo rat (*Dipodomys ingens*), and Tipton kangaroo rat (*Dipodomys nitratoides*). Additionally, this region contains the State listed San Joaquin antelope squirrel (*Ammospermophilus nelsoni*), which BLM treats as a special status species (SSp.) pursuant to its policy of the same name (BLM 6840). There is no designated critical habitat for any threatened or endangered species on the project site or in the vicinity.

The proposed project location is located within non-native annual grassland and valley saltbush scrub habitat that is moderately developed with oilfield infrastructure. Plant species observed on site include alkali saltbush (*Atriplex polycarpa*), red brome (*Bromus madritensis* ssp. *rubens*), fiddleneck (*Amsinckia menziesii*), tocalote (*Centaurea melitesis*), white bursage (*Ambrosia dumosa*), tamarisk (*Tamarix* sp.) and annual sunflower (*Helianthus annuus*). Kern mallow, San Joaquin woolly-threads, California jewelflower, and Bakersfield cactus were not observed in or near the project area. Animal species observed on site include common side-blotched lizard (*Uta stansburiana*), common raven (*Corvus corax*), Bewick's wren (*Thryonmanes bewickii*), and black-tailed jackrabbit (*Lepus californicus*).

A field survey to identify the potential for the occurrence of these listed species in the general project area was conducted by Kimberly Fiehler (West Kern Environmental, LLC) on May 7th, 2022. A project-specific onsite inspection was completed by BLM Natural Resource Specialist Fernando Baños on April 27th, 2022.

The biological surveys found no evidence of giant kangaroo rat (*Dipodomys ingens*) or Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) in the vicinity of the project sites, nor were there any observations of San Joaquin antelope squirrel (*Ammospermophilus nelsoni*); these species are not known to occur within the project site. There are no California Natural Diversity Data Base (CNDDB) records of these species within the footprint or surrounding areas of the project. In addition, disturbance levels and density of oilfield development make the project area unlikely habitat for these species. This project would not affect Giant kangaroo rat, Tipton kangaroo rat, or San Joaquin antelope squirrel.

No species-specific protocol surveys for blunt-nosed leopard lizard (*Gambelia* sila) were carried out. There are no CNDDB records of blunt-nosed leopard lizard within the project footprint or surrounding areas. There are no burrows suitable for use by blunt-nosed leopard lizard within the proposed project site. Due to disturbance levels and density of oilfield development, blunt-nosed leopard lizards are not likely to occur at the project site. This project would not affect Blunt-nosed leopard lizard.

No species-specific protocol surveys for temblor legless lizard (*Anniella alexanderae*) were carried out. There are no CNDDB records of temblor legless lizard within the project footprint or surrounding areas. There are no burrows suitable for use by temblor legless lizard within the

proposed project site. Due to disturbance levels and density of oilfield development, temblor legless lizards are not likely to occur at the project site. This project would not affect temblor legless lizard.

No potential or atypical San Joaquin kit fox (*Vulpes macrotis*) dens were observed within the project area. No individuals or sign of individuals (including scat, tracks, prey remains, etc.) were observed in the biological survey area. There are no CNDDB records of San Joaquin kit fox within the project footprint or surrounding areas. While no San Joaquin kit fox was encountered in the area, there is a potential for breeding and foraging in the project area.

Paleontological Resources

Every geologic unit can be assigned a Potential Fossil Yield Classification (PFYC) class based on the probability and abundance of known vertebrate fossils and scientifically significant invertebrate and plant fossils (BLM 2007). The PFYC scheme ranges from very low (PFYC 1) to very high (PFYC 5) depending on the potential fossil yield (BLM 2016). Unknown fossil potential is assigned to geologic units that do not have a clear PFYC assignment (PFYC U). Typically, paleontological resource compliance is required or recommended for earthwork occurring within PFYC classes 3, 4, 5, or U rock units.

The project area is underlain by late Miocene-aged to early Pliocene strata of the Kern River Formation. Following the Potential Fossil Yield Classification System (PFYC) of the BLM, a PFYC ranking of High (PFYC Class 4) is applied to deposits of the Kern River Formation in the study area (BLM Paleontological Resource Inventory Report # 6000-2017-20P).

Soil Resources

Two soil map units occur in the proposed project area: Chanac-Pleito-Premier association (#305; 20-60% slopes) and Chanac-Pleito complex (#193; 2-5% slopes). These map units are present on fan remnants. Soil textures with the potential to be encountered loam, gravelly sandy clay loam, gravelly clay loam, sandy clay loam, sandy loam and course sandy loam. These soils are deep and well drained. Soil map unit #193 is considered prime farmland if irrigated.

The above map units have soils with a water erosion K factor of 0.37 and 0.24, respectively. This is a metric used in determining soil erosion factors. Values of K can range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Therefore, the Chanace-Pleito-Premier soils have a moderate susceptibility to water erosion, while the Chanace-Pleito complex soils have a low susceptibility to water erosion.

The Chanace-Pleito-Premier map unit is assigned to wind erodibility group 6, while the Chanace-Pleito complex map unit is assigned to group 5. A wind erodibility group consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The wind erodibility group provides an indication of how susceptible areas disturbed by construction activities are to wind erosion. Soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. Therefore, there is a relatively low potential for wind erosion on the proposed project locations.

The project location is within a previously disturbed oilfield with numerous access roads, wells, pipelines, powerlines, and other associated oilfield infrastructure. As such, soils are highly disturbed within the project area and particularly prone to erosion from water and wind on previously disturbed soils.

Water Quality and Quantity

The proposed project is within the Tulare Lake Hydrologic Region, the San Joaquin Basin, and the Kern County Subbasin. This subbasin is bound on the north by the Kern County line, on the east and southeast by granitic bedrock of the Sierra Nevada foothills and Tehachapi Mountains, and on the southwest and west by the marine sediments of the San Emigdio Mountains and Coast Ranges. From oldest to youngest, the intermediate to shallow depth water-bearing deposits include the Olcese and Santa Margarita Formations (drinking water only in northeastern subbasin), the Tulare Formation (western subbasin), the Kern River Formation (eastern subbasin), older alluvium/stream deposits, and younger alluvium and flood basin deposits (DWR, 2006). The aquifers in this subbasin are generally quite thick, commonly exceeding 1,000 feet in depth. The maximum thickness of freshwater-bearing deposits (4,400 feet) occurs at the southern end of the subbasin (DWR, 2003).

There is a freshwater aquifer (per 40 CFR 144.3) in the project area, which is not exempted by the Regional Water Quality Control Board. The shallowest oil-producing reservoir is the Chanac-Kern River Formation of Pliocene and Pleistocene age, which can be as shallow as 250 feet in depth. The interval from surface to the top of the Chanac-Kern River Formation consists of Holocene, older alluvium, followed by Santa Margarita Formation, Round Mountain Formation, Olcese Formation, Freeman-Jewitt Formation, Pyramid Hill Formation, and Vedder Formation. Estimated depths of freshwater sands occur between 470 and 873 feet below surface and estimated depths of oil sands occur between 1506 and 2200 feet. Groundwater is protected from the contents of the well during drilling and production operations by a combination of steel casing(s), cement sheath(s), and other mechanical isolation devices installed as a part of the well construction process. In addition, the impermeable rock formations that lie between the hydrocarbon producing formation and any existing groundwater have isolated the groundwater over millions of years. Well construction is conducted in a manner to prevent migration and transportation of fluids between the subsurface layers.

Each well would require approximately 52,500 gallons of fresh water for drilling, dust control and pad construction; all water would be obtained from the Cawelo Water District fill station in Section 5, T27S, R27E. The average amount of water expected to be produced during the operational phase of each well is 1200 barrels of water per day. The produced fluids (oil and water) would be transported to the North Unit treatment facility in Section 4, T27S, R28E MDBM for processing. Following processing, the water would be sent to either the Pyramid Hill waterflood injection project or wastewater disposal wells Glide WD 464, Glide WD 473, and Glide WD 453. The water disposal project and the disposal wells are covered under an Underground Injection Permit issued by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (CDOGGR), now named California Geologic Energy Management Division (CalGEM).

Chapter 4. Environmental Impacts

This section describes the environmental impacts of the Proposed Action and No Action Alternatives. This analysis addresses the potential environmental effects of implementing the proposed project and includes the identified Design Features described in Chapter 2.

Air Quality

Proposed Action:
The proposed project would result in the emission of criteria pollutants for which the San Joaquin Valley Air Basin has non-attainment or maintenance designations for three criteria pollutants: ozone, PM_{10}, and $PM_{2.5}$. Project related sources of these pollutants include:

- **Well Development** emissions such as: combustion source emissions from diesel drilling rig engines, drill pad construction equipment (i.e., dozers, backhoe, grader, etc.), equipment trucks, water trucks, drill rig crew trucks/vehicles, and portable lift equipment; worker commuting and material deliveries; and fugitive dust emissions as a result of soil disturbance and vehicle traffic on unpaved surfaces.
- **Production** emissions including travel for daily inspections. Criteria pollutants or hazardous air pollutants could also occur through venting or fugitive losses during maintenance, emissions from use of chemicals, and leakage from valves and fittings, piping, and the well head.
- **Mid-Stream** includes emissions from transportation and processing of produced fluids after they leave the wellhead and before crude oil enters a pipeline to a refinery. For the proposed action, a portion of mid-stream emissions related to the project come from the North Unit treatment facility. This facility processes fluids from multiple wells. It is subject to a set of CAA NSR air permits issued by the SJVAPCD covering all of CRC's Heavy Oil Central operations and is not part of the APD and therefore is excluded from Federal Conformity analysis for the proposed action. Emissions from the North Unit treatment facility are monitored, regulated, limited, and mitigated by the SJVAPCD and CARB under EPA oversight so as to comply with NAAQS and are not expected to affect the NAAQS status of Kern County or the SJVAPCD.
- **Downstream** emissions come from the refining of crude oil produced from the proposed wells and its eventual consumption as petroleum products. Air emissions related to petroleum refining and consumption are regulated by air districts and CARB in California and by EPA and delegated state and local agencies in the rest of the country and are outside of BLM jurisdiction. There are many possibilities for the processing and consumption of oil produced and the specific transportation, processing, and consumption of any barrel of oil produced are not reasonably foreseeable. Potential downstream emissions are estimated based on representing produced crude oil as the equivalent volume of gasoline refined and consumed in cars in Kern County as modeled by the Argonne National Laboratory Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) Well-to-Wheels (WTW) calculator.

Air emissions from the six proposed wells are mitigated by the following factors:

- CARB and SJVAPCD have established and enforce rules, and permitting, inspection and monitoring requirements that reduce or mitigate emissions from the proposed wells.

- The proposed wells will not undergo hydraulic fracturing or other well stimulation processes.
- Wells in the Mt. Poso field are relatively shallow and so less time and energy are required to drill them.
- The Mt. Poso field is electrified, and electric-powered wellsite equipment is emission-free.
- Field conditions allow the wells to produce fluids directly into a pipeline without wellsite oil processing or storage.
- These well are not expected to produce natural gas.

Federal Conformity

Table 4.1 presents estimated direct and indirect emissions related to the proposed action that are under BLM control and program responsibility. These criteria pollutant emissions are compared with the Federal Conformity *de minimis* thresholds for the San Joaquin Valley Air Basin.

Table 4.1 - Estimated Maximum Year and Average Year Criteria and Hazardous Air Pollutant Emissions.

Activity		**PM_{10}**	**$PM_{2.5}$**	**VOC**	**NO_X**	**CO**	**SO_2**	**HAPs**
		tons	**tons**	**tons**	**tons**	**tons**	**tons**	**tons**
Well Development	**Max**	0.705	0.072	0.006	0.053	0.088	0.001	0.001
	Average	0.059	0.006	0.000	0.004	0.007	0.000	0.000
Production Operations	**Max**	0.004	0.000	0.548	0.000	0.000	0.000	0.054
	Average	0.003	0.000	0.456	0.000	0.000	0.000	0.045
Maximum Annual Total		**0.708**	**0.073**	**0.553**	**0.053**	**0.088**	**0.001**	**0.056**
Average Year Total		0.062	0.006	0.457	0.005	0.008	0.000	0.045
Federal Conformity *De Minimis* Threshold		**100**	**70**	**10**	**10**	**100**	**100**	**NA**

As shown in the table, maximum estimated well development and production emissions from the 6 proposed wells combined are well below the *de minimis* threshold for each criteria pollutant. This means that project emissions are expected to be consistent with the SIP and that a formal conformity determination under 40 CFR Part 93.153 is not required. That the emissions conform to the SIP indicates that their environmental impacts would be negligible meaning that they would not be likely to cause or contribute to an exceedance of the NAAQS.

Potential for Criteria Pollutant Impacts

Table 4.2 presents estimated highest annual emissions of each criteria pollutant and total HAPs related to the project in the context of emissions of the same pollutants in Kern County and the State of California.

Table 4.2 Estimated Maximum Annual Emissions related to Well Development, Production Operations, Mid-stream, and End-use with context (tons per year)							
Activity	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**NO_X**	**CO**	**SO_2**	**HAPs**

	tons per year	**tons per year**	**tons per year**	**tons per year**	**tons per year**	**tons per year**	**tons per year**
Well Development	0.70	0.07	0.01	0.05	0.09	0.00	0.00
Production Operations	0.00	0.00	0.55	0.00	0.00	0.00	0.05
Mid-Stream[1]	0.54	0.38	0.86	5.22	3.20	1.50	0.09
End-Use[2,4]	1.58	0.34	10.54	3.78	125.64	0.09	1.05
Total	**2.83**	**0.79**	**11.95**	**9.05**	**128.93**	**1.59**	**1.20**
Context							
Kern County - Annual[3]	15,317	6,044	37,111	26,093	58,058	1,318	3,546
State of California - Annual[3]	797,109	455,296	1,482,737	505,304	5,730,622	50,007	228,611

1 - Midstream emissions estimated as the GREET WTW Calculator Well to Pump (WTP) emissions minus the average site-specific well operations emissions estimated by BLM. These emissions come largely from facilities that require a permit issued by the SJVAPCD or other California air districts under the new source review (NSR) program and the applicable SIP. BLM does not have practical control or continuing program responsibility over these emissions.

2 - End use emissions estimated based on an equivalent volume for gasoline used as modeled by Argonne National Laboratory. 2022. GREET WTW Calculator (https://greet.es.anl.gov/tools). BLM does not have practical control or continuing program responsibility over these emissions.

3 - Total annual pollutant emissions for Kern County and the State of California reported by EPA in the 2017 National Emission Inventory (https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data#dataq)

4- HAP emissions estimated as 1/10th of VOC emissions

As shown in Table 4.2, total emissions of pollutants of concern for the Project area (NOx, VOC, PM_{10}, and $PM_{2.5}$) would add up to 2.8 + 0.8 + 12.0 + 9.1 = 24.6 tons or less each year. Total criteria pollutant emissions in Kern County add up to 69,248 tons per year. This means total project-related well development, production related, midstream, and end-use criteria pollutant emissions make up at most 0.04% of pollutant of concern emissions in Kern County. (24.6 / 69,248 = 0.04%).

In addition to the Federal Conformity *de minimis* thresholds, the AQI can also illustrate the potential for the proposed emissions to have an impact on air quality. AQI generally increases with increasing pollutant emissions, but the relationship between AQI and emissions is complex, meaning that a change in emissions does not result in the same amount of change in the AQI. However, for discussion purposes we can consider the hypothetical case where the AQI would increase directly with the proposed emissions analyzed in this EA. This would mean that on a day with an AQI of 100, the 0.04 percent emissions increase described in the preceding paragraph would also raise the AQI by 0.04 percent. This would increase the AQI from 100 to 100.04. That is indeed an increase; however, it is not a substantial increase: it does not change the AQI health risk category because the AQI is designed so that it takes a 50- or 100-point change to indicate a significant change in health risk. In fact, the EPA determined that changes less than 1 are not even large enough to report. In other words, changes smaller than 1 are not discernible in the AQI. This reflects the fact that they do not result in discernable public health effects. This example illustrates

the fact that the small pollutant of concern increase related to the project (0.04 percent) would have a negligible effect on air quality or on air-quality-related impacts.

As described in Chapter 3, there are several SJVAPCD rules that would minimize air quality impacts, such as Rules 2280, 4101, 4401, 4402, 8021, and 8031. For example, applicant compliance with Regulation VIII (Rules 8021 and 8031) would minimize particulate emissions by requiring CRPC to water unpaved access roads in the project area and to water soils prior to excavation and trenching and during backfilling while compacting. Applicant compliance with Rule 2280 would ensure that ROG/VOC and NOx emissions from certain portable units, such as the drilling rig, would be evaluated per the SJVAPCD's calculation methodologies, and any increase in emissions would be fully offset during the air permitting process. Implementation of this existing regulatory mechanism would offset the increase in potential emissions related to the proposed project.

Potential for Hazardous Air Pollutant / Toxic Air Contaminant Impacts

As described above, well development and oil production may result in HAP/TAC emissions The two most prevalent oil well related TACs are hydrogen sulfide and diesel exhaust (diesel particulate matter or DPM). The specific HAP compounds and the amounts of these compounds emitted depend on the HAP content of the produced oil as well as well development and management techniques employed. The wells proposed in this project will not undergo hydraulic fracturing or other well stimulation procedures and so HAP/TAC emissions are limited to HAPs contained in the produced fluids and emitted by construction equipment.

The North Treatment Unit – Heavy Oil Central facility which processes oil produced from the field where the proposed wells are to be located has reported detailed HAP/TAC emissions to CARB as required by State regulations. The composition of these emissions are expected to be representative of emissions from the proposed well. Table 4.3 presents detailed HAP emissions by compound or group of compounds estimated for the proposed wells. Similarly detailed HAP/TAC emissions for Kern County and the State of California from the EPA National Emissions Inventory are also provided as context. Because of the many different transportation, processing, and end use possibilities for crude oil produced in Kern County, it is not feasible to estimate detailed midstream or downstream HAP and TAC emissions related to the proposed action. However, these emissions are included as total project HAP reported above and in Kern County and statewide totals.

Table 4.3 - Estimated Air Toxic (HAP/TAC) Emissions from Well Development and Production Operations by Compound with Context (pounds)

HAP/TAC[1]	Well Development	Production Operations	Kern County[5]	State of California[7]
	Pounds	Pounds per year	Pounds per year	Pounds per year
Diesel Exhaust Particulate[2,3,4]	14.4800	3.2200	not reported	35,770,000
Hydrogen Sulfide[5]	0.0000	8.3672	126,207	2,044,879
Acetaldehyde	0.3322	10.5076	486,065	55,498,494
Acrolein	0.3321	10.5032	109,323	15,830,969
Benzene	0.0416	1.3168	495,710	24,291,159

Ethyl Benzene	0.2907	9.1927	300,091	6,333,694
Formaldehyde	0.7876	24.9096	979,479	85,983,887
Hexane	0.0001	0.0039	217,766	10,313,927
Toluene	0.4775	15.1031	1,248,817	51,463,542
Xylenes	0.5991	18.9481	829,241	31,473,378
Total Polycyclic Organic Matter (POM)[2]	0.0057	0.2181	123,076	16,924,295
Total	**17.3**	**102.1**	**4,792,699**	**319,003,929**

1- for more information on the health effects of listed HAPs see: EPA. Health Effects Notebook for Hazardous Air Pollutants. https://www.epa.gov/haps/health-effects-notebook-hazardous-air-pollutants

2- Diesel Particulate Matter (DPM) estimated as 10% of Well Development $PM_{2.5}$. Diesel Particulate matter includes POM. Diesel particulate matter is identified as a toxic air contaminant in California but is not a federally listed HAP. See CARB, 1998 Health Risk Assessment for Diesel Exhaust for information on health effects. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/diesltac/partb.pdf

3 - Production DPM emissions estimated as emissions from site inspections done in a diesel-fueled pickup truck with emissions of 0.085 g/mile and 730 miles per year

4- CA statewide emissions source: CARB. Almanac 2013 – Chapter 2: Current Emissions and Air Quality. 2013. https://ww2.arb.ca.gov/sites/default/files/2021-01/chap213.pdf

5- For more information on hydrogen sulfide Health Effects see: https://ww2.arb.ca.gov/resources/hydrogen-sulfide-and-health

6- Hydrogen sulfide emissions source CARB Facility database https://ww2.arb.ca.gov/applications/facility-search-engine. Other compounds source - EPA. 2017 National Emission Inventory (https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data#dataq)

7 - Total annual pollutant emissions for Kern County and the State of California reported by EPA in the 2017 National Emission Inventory (https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data#dataq)

For context, the total annual production operation HAP/TAC emissions (102.1 lbs per year) are comparable to emissions from two busy gasoline stations equipped with Phase I & II Enhanced Vapor Recovery (99.2 lbs per year, not counting emissions from customer cars).

BLM has considered air toxic (HAP and TAC) emissions from the proposed action in several ways to assess their potential for impacts:

- Beginning in the 1990s EPA studied oil exploration and production operations to determine if oil and gas exploration and production HAP emission impacts were significant enough to require regulation under the National Emission Standards for Hazardous Air Pollutants (NESHAP). Oil and gas production NESHAP rules and rule revisions were promulgated in 1999, 2001, 2007, and 2012. To date, only one type of oil exploration and production equipment, glycol dehydrators, has been identified as a significant source of HAP emissions requiring regulation. No glycol dehydrators or any other new processing operations are proposed as part of the project. BLM reviewed the EPA rulemaking and data

on HAP emissions from representative single oil wells and found that in each case HAP emissions were below the threshold requiring controls under the NESHAP.

- In 2022, the California Legislature established a requirement for a health protection zone of 3,200 feet (0.6 miles) between residences and other sensitive receptors and oil wells. This requirement was intended to protect residents from health impacts of HAP/TAC emissions from well sites. Based on satellite imagery, the nearest potential residence to the project is located more than 6 miles west of any proposed well site. The receptor is well outside the specified health protection zones of the proposed wells.

- Kern County has a large number and variety of HAP and TAC emission sources including highways (a major source of diesel exhaust), factories, and chemical facilities as well as the oil and gas industry. Estimated annual HAP and TAC emissions form the proposed action total 102.1 pounds. That would represent 0.002% of the more than 4,792,699 pounds of HAP and TAC emissions expected in Kern County as a whole. Because the proposed wells are not located close to any receptors and their projected emissions are very small, the estimated well emissions would not be expected to increase current HAP or TAC health impacts in Kern County in a discernable way.

- The State of California oversees a statewide program required by AB2588 that includes air toxics emissions reporting and health risk assessment covering air toxic sources, including sources in midstream and downstream supply chain related to the proposed wells. The program includes a computer modeling package designed to allow facility operators to perform a basic air toxics risk prioritization. The package in called The Hotspots Analysis and Reporting Program Emission Inventory Module (HARP). HARP models air toxic concentrations at the nearest receptor to a facility being assessed and provides a prioritization score for use by air districts in determining whether that facility should conduct further risk assessment or further reporting. The SJVAPCD interprets prioritization scores as follows:

Prioritization	Prioritization Score	Outcome
Proposed Action	0.0122	See Below
Low Priority	Prioritization ≤ 1	Exempt from further requirements
Intermediate Priority	$1 <$ Prioritization ≤ 10	Facility updates report every four years
High Priority	$10 <$ Prioritization	Facility required to report a Health Risk Assessment

The six proposed wells were entered into HARP as a single facility with all air toxics emitted at the same location. This is conservative because the wells are on multiple leases and are planned to be installed at different locations within the Mt Poso oil field. Combining sources into a single location increases the modeled concentration at the receptor. Even so, the HARP prioritization score for the six proposed wells combined was 0.0122, well below the low priority threshold indicating exemption from further analysis.

BLM has reviewed the AB2588 program and concurs that it adequately assesses and informs the public on air toxic health risks.

No Action:
There would be no new impacts to air quality under the No Action Alternative because the proposed wells would not be drilled. Ongoing air quality issues and impacts described in Chapter 3 above would remain the same in absence of the proposed project.

Climate Change

Proposed Action:
The proposed action would result in emissions of GHGs that are known to contribute to global climate change. These emissions are associated with combustion sources such as diesel drill and completion/workover rig engines, drill pad construction equipment (i.e., dozers, backhoe, grader, etc.), equipment trucks, water trucks, drill rig crew trucks/vehicles, and portable lift equipment. Emissions of GHGs could also occur through venting or fugitive losses from valves and fittings, pumps, compressors, and the well head.

There are four general phases of post-lease development that would generate GHG emissions: 1) well development (well site construction, well drilling, and well completion), 2) well production operations, 3) mid-stream (processing, refining, storage, and transport/distribution), and 4) end-use (combustion or other uses) of the fuels produced. While well development and production operation emissions occur on-lease and the BLM has program authority over these activities, mid-stream and end-use emissions typically occur off-lease where the BLM has no program authority.

The amount of oil or gas that may be produced by the proposed wells is not known. For purposes of estimating production and end-use emissions, potential wells are assumed to produce oil and gas in similar amounts to existing nearby wells. BLM downloaded records that included initial production data for a number of nearby representative wells from the CalGEM Welfinder website (https://www.conservation.ca.gov/calgem/Pages/WellFinder.aspx) to use as a basis for production estimates. While the BLM has no authority to direct or regulate the end-use of the products, for this analysis, the BLM assumes all produced oil or gas will be combusted (such as for domestic heating or energy production). The BLM acknowledges that there may be additional sources of GHG emissions along the distribution, storage, and processing chains (commonly referred to as midstream operations) associated with production from the lease parcels. These sources may include emissions of methane (a more potent GHG than CO_2 in the short term) from pipeline and equipment leaks, storage, and maintenance activities. These sources of emissions are highly speculative at the leasing stage, therefore, the BLM has chosen to assume that mid-stream emissions associated with lease parcels for this analysis will be similar to the national level emissions identified by the Department of Energy's National Energy Technology Laboratory (NETL, 2009) (NETL, 2019).

The emission estimates calculated for this analysis were generated using the assumptions previously described above using the BLM Lease Sale Emissions Tool. Emissions are presented for each of the four phases of post-lease development described above.

- Well development emissions occur over a short period and may include emissions from heavy equipment and vehicle exhaust, drill rig engines, completion equipment, pipe venting, and well treatments such as hydraulic fracturing.
- Well production operations, mid-stream, and end-use emissions occur over the entire production life of a well, which is assumed to be 30 years for this analysis based on the productive life of a typical oil/gas field.
- Production emissions result from wellhead operations, fugitives, and vehicle exhaust. Emission sources including storage tank breathing and flashing, truck loading, pump engines, heaters and dehydrators, pneumatic instruments or controls, flaring, and fugitives are located at the North Treatment unit.
- Mid-stream emissions occur from the transport, refining, processing, storage, transmission, and distribution of produced oil and gas. Mid-stream emissions are estimated by multiplying the estimated ultimate recovery (EUR) of produced oil and gas with emissions factors from NETL life cycle analysis of U.S. oil and natural gas. Additional information on emission factors can be found in the Annual GHG report (Chapter 4, Table 4-7 and 4-9).
- For the purposes of this analysis, end-use emissions are calculated assuming all produced oil and gas is combusted for energy use. End-use emissions are estimated by multiplying the EUR of produced oil and gas with emissions factors for combustion established by the EPA (Tables C-1 and C-2 to Subpart C of 40 CFR § 98). Additional information on emission factors and EUR factors can be found in the Annual GHG Report (Chapter 4).

Table 4.4 lists the estimated direct (well development and production operations) and indirect (mid-stream and end-use) GHG emissions in metric tons (tonnes) for the subject leases over the average 30-year production life of the lease.

Table 4.4 - Estimated Production Life Emissions from Well Development, Well Production Operations, Mid-stream, and End-use (tonnes)

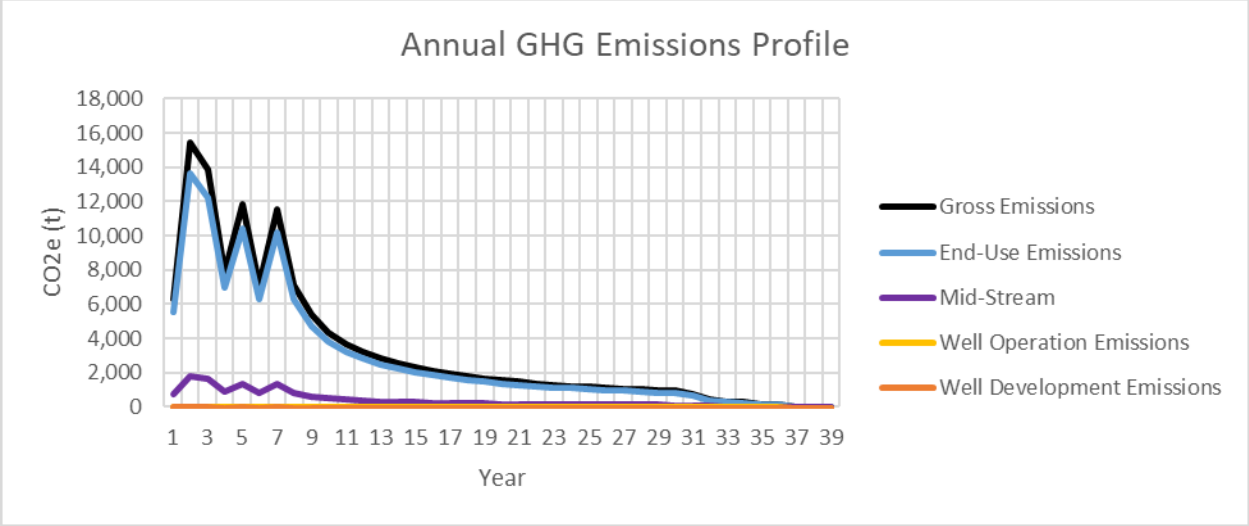
Activity	CO_2	CH_4	N_2O	CO_2e (100-yr)	CO_2e (20-yr)
Well Development	79	0.00	0.000	79	79
Production Operations	5	5.66	0.000	174	472
Mid-Stream	14,384	15.46	0.244	14,911	15,726
End-Use	112,714	4.54	0.907	113,097	113,336
Total	127,183	25.65	1.152	128,262	129,614

Source: BLM Lease Sale Emissions Tool

GHG emissions vary annually over the production life of a well due to declining production rates over time. **Error! Reference source not found.** shows the estimated GHG emissions profile over the production life of a typical lease including well development, well production operations, mid-stream, end-use, and gross (total of well development, well production, mid-stream, and end-use) emissions.

Figure 4.1 - Estimated GHG Emissions Profile over the Production Life of the Proposed

Wells



Source: BLM Lease Sale Emissions Tool

To put the estimated GHG emissions for this lease sale in a relatable context, potential emissions that could result from development of the lease parcels for this sale can be compared to other common activities that generate GHG emissions and to emissions at the state and national level. The EPA GHG equivalency calculator can be used (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator) to express the potential average year GHG emissions on a scale relatable to everyday life. For instance, the projected average annual GHG emissions from potential development of the subject lease are equivalent to 768 gasoline-fueled passenger vehicles driven for one year, or the emissions that could be avoided by operating 1 wind turbines as an alternative energy source or offset by the carbon sequestration of 4,241 acres of forest land.

Table 4.5 compares emission estimates over the 30-year life of the lease compared to the 30-year projected Federal emissions in the state and nation from existing wells, the development of approved APDs, and emissions related to reasonably foreseeable lease actions.

Table 4.5 - Comparison of the Production Life Emissions to other Federal Oil and Gas Emissions

Reference	Mt CO_2e (per year)	Average Year % of Reference
Proposed Action Emissions (Average Year)	0.128	100.000%
CA Reasonably Foreseeable Short-term Federal (O&G)[1]	51.49	0.249%
CA EIA Projected Long-term Federal (O&G)[2]	202.74	0.063%
U.S. Short-term Federal (O&G)	4,614.81	0.003%
U.S. Long-term Federal (O&G)	13,560.24	0.001%

Source: U.S. and Federal emissions from BLM Lease Sale Emissions Tool and Annual GHG Report Tables 5-17 and 5-18.
[1] Short-term foreseeable is estimated Federal emissions from existing producing wells, approved APDs, and one year of leasing.
[2] Long-term foreseeable are estimated Federal emissions to meet EIA projected energy demand.

Compared to emissions from other existing and foreseeable short-term Federal oil and gas development, the life of lease emissions for the Proposed Action is between 0.063% to 0.249% of Federal fossil fuel authorization emissions in the state and between 0.001% to 0.003% of Federal fossil fuel authorization emission in the nation (EPA, 2022). In summary, potential GHG emissions from the Proposed Action could result in GHG emissions of 0.128 MT CO_2e over the production life of the proposed wells.

The "social cost of carbon", "social cost of nitrous oxide", and "social cost of methane" – together, the "social cost of greenhouse gases" (SC-GHG) are estimates of the monetized damages associated with incremental increases in GHG emissions in a given year. Such analysis should not be construed to mean a cost determination is necessary to address potential impacts of GHGs associated with specific alternatives. These numbers were monetized; however, they do not constitute a complete cost-benefit analysis, nor do the SC-GHG numbers present a direct comparison with other impacts analyzed in this document SC-GHG is provided only as a useful measure of the benefits of GHG emissions reductions to inform agency decision-making. For Federal agencies, the best currently available estimates of the SC-GHG are the interim estimates of the social cost of carbon dioxide (SC-CO2), methane (SC-CH4), and nitrous oxide (SC-N2O) developed by the Interagency Working Group (IWG) on the SC-GHG. Select estimates are published in the Technical Support Document (IWG 2021) and the complete set of annual estimates are available on the Office of Management and Budget's website. [12]

The SC-GHGs associated with estimated emissions from development of the proposed wells are reported in Table 4.6. These estimates represent the present value (from the perspective of 2021) of future market and nonmarket costs associated with CO_2, CH_4, and N_2O emissions from potential well development and operations, and potential end-use, as described in Subsection 1.2.1. Estimates are calculated based on IWG estimates of social cost per metric ton of emissions for a given emissions year and BLM's estimates of emissions in each year. They are rounded to the nearest $1,000. The estimates assume development will start in 2023 and end-use emissions complete in 2059, based on experience with previous lease sales.

Table 4.6 SC-GHGs Associated with Future Potential Development

	Social Cost of GHGs (2020 $)			
	Average Value, 5% discount rate	**Average Value, 3% discount rate**	**Average Value, 2.5% discount rate**	**95th Percentile Value, 3% discount rate**
Development and Operations	$4,000	$12,000	$17,000	$34,000
Mid-Stream and End-Use	$1,621,000	$6,066,000	$9,169,000	$18,279,000
Total	$1,625,000	$6,078,000	$9,186,000	$18,313,000

As detailed in the Annual GHG Report (BLM, 2022), which the BLM has incorporated by reference, the BLM also looked at other tools to inform its analysis, including the MAGICC model (see Section 7.0 of the Annual GHG Report). This model run suggests that "30-plus years of projected federal emissions would raise average global surface temperatures by approximately 0.0158 °C., or 1% of the lower carbon budget temperature target." As this is an assessment of what BLM has projected could come from the entire Federal fossil fuel program, including the projected emissions from the proposed action, over the next 30 years, the reasonably foreseeable lease sale emissions contemplated in this EA are not expected to substantially affect the rate of change in climate effects, bring forth impacts that are not already identified in existing literature, or cause a change in the magnitude of impacts from climate change at the state, national, or global scales.

Compared to total GHG emissions in the state, the emissions from the proposed action would not have a significant impact. Additionally, in recent years, Plugging and Abandonments (P&A's) of wells has outpaced the drilling of new wells, thus ultimately reducing GHG's.
References:
No Action:

Under the No Action Alternative, the BLM would not permit the 6 proposed wells. However, proponent could apply for application to drill at other locations or at future times. Although no new GHG emissions associated with new Federal oil and gas development for the subject leases would occur under the No Action Alternative in the foreseeable future, the cumulative demand for energy is not expected to differ regardless of BLM decision-making (EIA, 2020). The BLM has no information regarding what energy source could fill the energy demand if development does not occur on the subject leases. Although the change in emissions compared to the Proposed Action could range from a 98.5% decrease if hydroelectricity is substituted to a 110.7% increase if coal is substituted, see Table 10-3 in Section 10.0 of the Annual Report (BLM, 2022). Over the past decade the increasing mix of natural gas has contributed to lower emissions as it has replaced energy produced from coal. In 2022, high prices for natural gas and demand exceeding supply

have resulted in some countries reactivating or delaying planned closures of coal fired power plants (Reuters, 2022). In the future, renewable energy is anticipated to become a larger part of the U.S. energy mix and reducing energy related carbon emissions. It has been estimated that with a 35% integration of wind and solar energy into the Western United States electric grid, there would be an additional 25-45% reduction in carbon emissions (BLM 2022). Based on this information there is potential for higher emissions over the short-term and reduced emissions over the long-term. The BLM cannot estimate the net effects across all energy markets to understand the mix of energy resources that will meet demand, and therefore can't provide an estimate of SC-GHG for the No Action Alternative.

Biological Resources

Proposed Action:
Through clearing of vegetation, scraping, and grading, project implementation would disturb 1.092 acres of federally listed species potential habitat. Based on field surveys, federally listed plant and animal species and their sign (scat, tracks, etc.) are absent from the project footprint and a 250-foot area around the project, therefore direct impacts, such as vehicle collisions, entrapment in open trenches or sumps, and ingestion of oil field fluids, would not be expected.

Considering the loss of potential habitat, the BLM concluded the project "may affect, likely to adversely affect" listed species and formally consulted with the US Fish and Wildlife Service. Consultation was completed on a programmatic basis for oil and gas development in the southern San Joaquin Valley in 2017 (2017 Oil and Gas Programmatic Biological Opinion 08ESMF00-2016-F-0683, "2017 BO"). The 2017 BO conservation program includes detailed monitoring, reporting, and survey requirements as well as additional measures to avoid and minimize impacts to listed species. Applicable measures, based on habitat and species potential, are included in the proposed project description as Design Features and as project specific authorization #136 under the 2017 BO. Implementation of these measures would further reduce the potential for impacts. Furthermore, the measures require off-site conservation of listed species habitat in perpetuity. Specifically, for project authorization #136, a preliminary estimate of compensation acres is 3.276 compensation acres (1.092 permanent acres compensated at 3:1= 3.276 acres + no replacement acres as the project are not on Conserved Lands). After the Post Construction Compliance Report is submitted, the compensation acreage will become final.

For non-listed species, the same mechanisms of potential direct and indirect impact discussed in the 2017 BO would apply. Adherence to the provisions of the Design Features and the 2017 BO project specific authorization would result in similar protections for non-listed species.

No Action:
There would be no additional impacts to biological resources from the No Action Alternative. However, the rejection of the APDs would not alter the trajectory of listed species populations relative to APDs approval because the amount of disturbance is inconsequential on a regional scale. Also, under the No Action alternative, there would be no long-term off-site conservation of listed species habitat, and the impacts to habitat may only be postponed until the next APD is approved for the development of the mineral lease.

Paleontological Resources

Proposed Action:
A paleontological resources survey was conducted which can be applied to the project areas (BLM Paleontological Resource Report # 6000-2017-20P). The results of this survey indicate that the project area is underlain by the Kern River Formation, which is identified to have a high potential for fossil resources (PFYC 4). As a result, direct impacts to paleontological resources could occur during any excavation and earthwork in the area.

The proposed well would occur on private lands containing BLM administered mineral estate. Federal paleontological compliance requirements for projects conducted under the Mineral Leasing Act are subject to the discretion of the surface landowner. The owner of the private surface land has elected to follow mitigation and monitoring procedures described in detail in the project design features above for the CAS019301C (Alta Vedder lease) lease wells. The CACA004999 (Rench lease) lease wells are waived for paleo monitoring.

No Action
There would be no direct impacts to paleontological resources under the no action alternative. Any fossils would stay in place, and there would be no ground disturbance in the area. As a result, there would be no opportunity to study depositional environments or collect fossils where there are no natural exposures. Buried fossils do not provide opportunity for scientific investigation. Mitigating for adverse effects to paleontological resources is a management practice that preserves resources and accommodates development. This mitigation is required for all project activities on BLM surface or private lands for which federal paleontological compliance requirements have not been waived.

Soil Resources

Proposed Action:
Soil disturbance would occur as a result of well pads, roads, staging site construction, and drilling operations. Topsoil and soil horizons would be removed and/or mixed, changing soil-water dynamics and removing nutrients from the project site. In addition, soils would be compacted, which could lead to surface water runoff, sediment carry, and water erosion concerns. Potential for water erosion is moderate to low, while there is a relatively low potential for erosion from wind at the project site. However, CRPC would minimize and mitigate these impacts by conducting interim reclamation utilizing site-specific topsoil on the temporary staging areas, cut and fill slopes, and the sump subsequent to drilling operations. This would include all practicable measures to minimize erosion and stabilize disturbed soils. Also, CRPC would conduct final reclamation at the project site when the wells are abandoned. In addition, CRPC would comply with all relevant federal, and applicable state, and local air quality rules and regulations to reduce emissions of particulate matter originating from soil disturbance at the project site.

CRPC is required to comply with all relevant federal, and applicable state, and local laws and regulations, including provisions of EPA regulation 40 CFR 112, Oil Pollution Prevention, and BLM California IM CA-92-124, Oil and Gas Guidelines for Undesirable Events (NTL-3A). Nonetheless, the potential remains for hydrocarbon and chemical leaks or spills to occur on the

project site and contaminate soils during project implementation. Given the required regulatory compliance framework, the likelihood of these spills is low and the impacts to soils from spills would not be significant.

No Action:
There would be no additional impacts beyond existing activities to soil from the No Action alternative because the project would not occur.

Water Quality and Quantity

Proposed Action:
The Design Features of the Proposed Action would avoid direct and indirect impacts to underground sources of drinking water and surface waters. Although there is a groundwater aquifer that is not exempt from the waiver system set for by the Regional Water Quality Control Board, engineering controls such as casing and cementing would isolate any sources of groundwater during drilling operations. Surface waters are not expected to be directly or indirectly impacted because CRPC would avoid modification to the adjacent drainage. Also, CRPC would implement all applicable Design Features to avoid erosion, sediment carry, and other impacts to the adjacent drainage. In addition, water used and produced during the project would be recycled and/or reinjected back into the groundwater aquifer under an Underground Injection Permit issued by CalGEM.

No Action:
There would be no additional impacts to water quality and quantity from the No Action alternative because the project would not occur.

CUMULATIVE IMPACTS

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of which agency (federal or non-federal) or person undertakes such other action. The time frame for the cumulative impact analysis is 30 years, i.e., the projected life of drilling, production, and abandonment of the proposed wells.

The combination of all land use practices across a landscape has the potential to change the visual character, disrupt natural water flow and infiltration, disturb cultural sites, cause minor increases in GHG emissions, fragment wildlife habitat, and contaminate groundwater. However, the likelihood of these impacts occurring is minimized through standard mitigation measures, special COAs, and ongoing monitoring studies.

All resources are expected to sustain some level of cumulative impacts over time; however, these impacts fluctuate with the gradual abandonment and reclamation of wells. As new wells are being drilled, there are others being abandoned and reclaimed. As the oil field plays out, the cumulative impacts would lessen as more areas are reclaimed and fewer are developed.

Air Quality and Climate Change

Proposed Action:
As described in Chapter 3, Kern County and the SJVAPCD include many air pollutant sources and residents experience poor air quality and exposure to air toxics. Air quality and health impacts are driven by pollutant concentrations in the air. Pollutant concentrations depend primarily on the rate of pollutants emitted within an air basin or it's co-located air district or counties. If pollutants are emitted at a higher rate than natural processes (such as rainfall, atmospheric chemical reactions, absorption on surfaces, or respiration) can remove them air quality decreases. Table 4.2 summarizes the cumulative relationship between emission rates caused by the proposed action and emissions already being released each year in the surrounding county and in the State as a whole. Table 4.7 shows project related emission rates as a percentage of ongoing emissions for the pollutants of concern.

Table 4.7 Project-related Pollutants of Concern Emission Rates as Percentage of Ongoing Emissions

Activity	PM_{10}	$PM_{2.5}$	VOC	NO_X	HAPs
	tons per year	tons per year	tons per year	tons per year	tons per year
Project total	2.83	0.79	11.95	9.05	1.20
Kern County	15,317	6,044	37,111	26,093	3,546
Project total as percent	0.0185%	0.0131%	0.0322%	0.0347%	0.0338%
State of California	797,109	455,296	1,482,737	505,304	228,611
Project total as percent	0.0004%	0.0002%	0.0008%	0.0018%	0.0005%

As shown in the Table, the proposed well will increase total emissions of nonattainment pollutants or precursors in Kern County and also in the SJVAPCD. However, as described above in the discussion of AQI, the increases are very small compared to ongoing emissions and would not be expected to degrade current air quality in a significant or even detectable way. A similar analysis applies to HAP emissions. Kern County and SJVAPCD residents are exposed to a substantial rate of ongoing HAP emissions and related health risks. The proposed wells would increase those emissions; however, as described above, the increase is too small to cause a significant change to existing health risks.

BLM reviewed data available from the CalGEM Well Finder website (https://www.conservation.ca.gov/calgem/Pages/WellFinder.aspx) to assess the future pollutant emission trends from the proposed wells. Individual records of a representative sample of wells in the vicinity of the proposed wells show that oil production declines rapidly beginning within weeks of when a new well comes online in the Mt Poso field and continues to decrease throughout its production life. This pattern of production decline, depicted in Figure 4.1 for GHG emissions, is typical for oil and gas wells. Most of the emissions from the proposed wells, including all the midstream and end use emissions, are directly related to production volumes and so future criteria, GHG, and HAP emission rates from the proposed wells are expected to be lower that the rates analyzed in this EA. Therefore, future environmental and health risks related to these wells are expected to decrease from the levels described in this analysis.

Cumulative oil and gas emissions and related health risks in the air district are similarly related to the total number and age of wells. both BLM and CalGEM (https://www.bakersfield.com/news/state-takes-credit-for-issuing-23-fewer-oil-drilling-permits/article_b81a116c-5f36-11eb-a28c-937444d34f20.html) records show decreased rates of new drilling and increased rates of well abandonment in recent years. If this trend continues, future total oil and gas production industry criteria, GHG and HAP/TAC emissions would be expected to decline. Current California policy calls for significant reductions in fossil fuel use. To the extent that these policies can be implemented, demand for petroleum products and drilling of new oil wells would be expected to continue or even accelerate the currently observed decline. These trends indicate that future cumulative air toxics (HAP and TAC) health risk will likely be lower than current risks.

The analysis of GHGs contained in this EA includes estimated emissions from the lease as described above. An assessment of GHG emissions from other BLM fossil fuel authorizations, including coal leasing and oil and gas leasing and development, is included in the BLM Specialist Report on Annual GHG Emissions (referred to as Annual Report, see Chapter 5). The Annual Report includes estimates of reasonably foreseeable GHG emissions related to BLM lease sales anticipated during the fiscal year, as well as the best estimate of emissions from ongoing production, and development of parcels sold in previous lease sales. It is, therefore, an estimate of cumulative GHG emissions from the BLM fossil fuel leasing program based on actual production and statistical trends.

The Annual Report provides an estimate of short-term and long-term GHG emissions from activities across the BLM's oil and gas program. The short-term methodology presented in the Annual Report includes a trends analysis of (1) leased federal lands that are held-by-production, (2) approved applications for permit to drill (APDs), and (3) leased lands from competitive lease sales occurring over the next annual reporting cycle (12 months), to provide a 30-year projection of potential emissions from Federal oil and gas lease actions over the next 12 months. The long-term methodology uses oil and gas production forecasts from the Energy Information Administration (EIA) to estimate GHG emissions out to 2050 that could occur from past, present, and future development of Federal fluid oil and gas. For both methodologies, the emissions are calculated using life-cycle-assessment emissions and data factors. These analyses are the basis for projecting GHG emissions from lease parcels that are likely to go into production during the analysis period of the Annual Report and represent both a hard look at GHG emissions from oil and gas leasing and the best available estimate of reasonably foreseeable cumulative emissions related to any one lease sale or set of quarterly lease sales.

Table 5 shows the aggregate GHG emissions estimate that would occur from Federal leases, existing and foreseeable, between the years 2022 and 2050, using the methodology described above. The 5-year lease averages include all types of oil and gas leases, including leases granted under the Mineral Leasing Act as well as other authorities, that have been issued over the last five years. As such the projections made from the 5-year averages represent the potential for all types of future oil and gas development activity, and although not at exact acreages, include emissions that would be associated with the subject lease. However, they may also over-estimate the potential emissions from the 12-month cycle of competitive oil and gas leasing activities if the projected lease sale or development activity does not actually occur or is less than estimated.

Table 5. Reasonably Foreseeable Projected Emissions from Federal Lease Development

State (BLM Administrative Unit)	**GHG Emissions from Past, Present, and Foreseeable Federal Lease Development (Mt CO_2e per year)***
Alabama (ES)	9.34
Alaska	136.9
Arkansas (ES)	9.34
California	51.49
Colorado	243.1
Idaho	0.17
Illinois	0.31
Kansas (ES)	3.32
Kentucky (ES)	0.19
Louisiana (ES)	43.29
Michigan (ES)	1.95
Mississippi (ES)	2.89
Montana	58.82
Nebraska (WY)	0.21
Nevada	2.74
New Mexico	1,939.52
New York	0.01
North Dakota (MT)	379.63
Ohio (ES)	0.37
Oklahoma (NM)	20.43
Pennsylvania	0.46
South Dakota (MT)	2.31
Texas (NM)	49.55
Utah	187.84
Virginia	0.15
West Virginia (ES)	0.45
Wyoming	1,487.65
Total	**4,614.81**

*Emissions obtained from 2021 Annual Report, Figure 5-1

The most recent short-term energy outlook (STEO) published by the EIA (https://www.eia.gov/outlooks/steo/) (EIA, 2023) predicts that the world's oil and gas supply and consumption will increase over the next 18-24 months. The latest STEO projections are useful for providing context for the No Action discussion as the global forecast models used for the STEO are not dependent on whether the BLM issues onshore leases but are based on foreseeable short-term global supply and demand and include oil and gas development /operations on existing U.S. onshore leases. The most recent STEO includes the following projections for the next two years:

- U.S. liquid fuels consumption is projected to increase to 20.45 million barrels per day (b/d) in 2023 up from 20.28 million b/d in 2022 and further increase to 20.76 million b/d in 2024.
- U.S. crude oil production is expected to average 11.9 million b/d in 2022 and to rise to 12.4 million b/d in 2023 and 12.63 b/d in 2024.
- U.S natural gas consumption is expected to average 86.4 Bcf/d in 2023, decreasing from 88.5 Bcf/d in 2022.
- U.S. LNG exports are expected to increase from 10.59 billion cubic feet/day (Bcf/d) in 2022 to 12.07 Bcf/d in 2023 and 12.73 Bcf/d in 2024.
- U.S. Coal production is expected to total 552 million short tons (MMst) in 2023 and 502.6 MMst in 2024 and decrease to 17% of total U.S. electricity generation in 2023 compared to 20% in 2022 driven by on-going retirement of coal-fired generating plants.
- Generation from renewable sources will make up an increasing share of total U.S. electricity generation, rising from 22% in 2022 to 24% in 2023 and 26% in 2024.

Recent events, both domestically and internationally, have resulted in abrupt changes to the global oil and gas supply. EIA studies and recent U.S. analyses (associated with weather impacts, etc.) regarding short-term domestic supply disruptions and shortages or sudden increases in demand demonstrate that reducing domestic supply (in the near-term under the current supply and demand scenario) will likely lead to the import of more oil and natural gas from other countries, including countries with lower environmental and emission control standards than the United States (EIA, 2021). Recent global supply disruptions have also led to multiple releases from the U.S. Strategic Petroleum Reserve in order to meet consumer demand and curb price surges.

The EIA 2023 Annual Energy Outlook (https://www.eia.gov/outlooks/aeo/) projects energy consumption increases through 2050 as population and economic growth outweighs efficiency gains. As a result, U.S. production of natural gas and petroleum and liquids will rise amid growing demand for exports and industrial uses. U.S. natural gas production increases by 15% from 2022 to 2050. However, renewable energy will be the fastest-growing U.S. energy source through 2050 as electricity generation shifts to using more renewable sources, domestic natural gas consumption for electricity generation is expected to decrease by 2050 relative to 2022. As a result, energy-related CO_2 emissions are expected to fall 25% to 38% below 2005 level, depending on economic growth factors. Further discussion of past, present and projected global and state GHG emissions can be found in Chapter 6 of the Annual Report.

Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad" (January 27, 2021), directs the executive branch to establish policies or rules that put the United States on a path to achieve carbon neutrality, economywide, by no later than 2050. This goal is consistent with IPCC's recommendation to reduce net annual global CO emissions between 2020 and 2030 in order to reach carbon neutrality by mid-century. Federal agencies are still in the process of developing policies that align with a goal of carbon neutrality by 2050. In the short-term, the order has a stated goal of reducing economy wide GHG emissions by 50 to 52% relative to 2005 emissions levels no later than 2030.

Carbon budgets are an estimate of the amount of additional GHGs that could be emitted into the atmosphere over time to reach carbon neutrality while still limiting global temperatures to no more than 1.5°C or 2°C above preindustrial levels. The IPCC Special Report on Global Warming of 1.5ºC is the most widely accepted authority on the development of a carbon budget to meet the goals of the Paris Agreement. None of the global carbon budgets or pledges that countries have committed to stay within as part of the Paris Agreement are binding. Carbon budgets were originally envisioned as being a convenient tool to simplify communication of a complex issue and to assist policymakers considering options for reducing GHG emissions on a national and global scale. Carbon budgets have not yet been established on a national or subnational scale, primarily due to the lack of consensus on how to allocate the global budget to each nation, and as such the global budgets that limit warming to 1.5 ºC or 2.0 ºC are not useful for BLM decision making, particularly at the lease sale stage, as it is unclear what portion of the budget applies to emissions occurring in the United States.

However, stakeholders and members of the public have requested that the BLM consider comparing its predicted emissions in the context of global carbon budgets. Table 7-4 in the 2021 BLM Specialist Report provides an estimate of the potential emissions associated with BLMs fossil fuel authorizations in relation to IPCC carbon budgets. Total Federal fossil fuel authorizations including coal, natural gas and oil represents approximately 1.75 % of a suggested global carbon budget of 400-500 $GtCO_2$ needed to limit global warming to 1.5 C.

While continued fossil fuel authorizations will occur over the next decade to support energy demand and remain in compliance with the leasing mandates in the Inflation Reduction Act (IRA) passed in 2022, the U.S. Energy Information Administration International Energy Outlook expects renewable energy consumption to double between 2020 and 2050 and nearly equal liquid fuels consumption by 2050. The U.S. has committed to the expansion of renewable energy through infrastructure investments in clean energy transmission and grid upgrades include in the Bipartisan Infrastructure Investment and Jobs Act as well as clean energy investments and incentives included in the Inflation Reduction Act. The Department of Energy's Office of Policy developed a preliminary assessment that finds the IRA and BIL, in combination with past actions, are projected to reduce 2030 economy wide GHG emissions to 40% below 2005 level, even with continued oil and gas leasing in the near term. (https://www.energy.gov/sites/default/files/202208/8.18%20InflationReductionAct_Factsheet_Final.pdf)

1.3 Mitigation Strategies

GHG emissions contribute to changes in atmospheric radiative forcing resulting in climate change impacts. GHGs act to contain solar energy loss by trapping longer wave radiation emitted from the Earth's surface and act as a positive radiative forcing component. The buildup of these gases has contributed to the current changing state of the climate equilibrium towards warming. Chapters 8 and 9 of the Annual Report provides a detailed discussion of climate change science, trends, and impacts. The relationship between GHG emissions and climate impacts is complex, but a project's potential to contribute to climate change is reduced as its net emissions are reduced. When net emissions approach zero, the project has little or no contribution to climate change. Net-zero emissions can be achieved through a combination of

controlling and offsetting emissions. Emission controls (e.g., vapor recovery devices, no-bleed pneumatics, leak detection and repair, etc.) can substantially limit the amount of GHGs emitted to the atmosphere, while offsets (e.g., sequestration, low carbon energy substitution, plugging abandoned or uneconomical wells, etc.) can remove GHGs from the atmosphere or reduce emissions in other areas. Chapter 10 of the Annual Report provides a more detailed discussion of GHG mitigation strategies.

Several Federal agencies work in concert to implement climate change strategies and meet U.S. emissions reduction goals all while supporting U.S. oil and gas development and operations. The EPA is the Federal agency charged with regulation of air pollutants and establishing standards for protection of human health and the environment. The EPA has issued regulations that will reduce GHG emissions from any development related to the proposed leasing action. These regulations include the New Source Performance Standard for Crude Oil and Natural Gas Facilities (49 CFR 60, subpart OOOOa) which imposes emission limits, equipment design standards, and monitoring requirements on oil and gas facilities. A detailed discussion of existing regulations and Executive Orders that apply to BLM management of federal lands as well as current Federal and state regulations that apply to oil and gas development and production can be found above and in Chapter 2 of the Annual Report.

No Action:
Under the No Action Alternative there would be no incremental contribution to the past, present, and reasonably foreseeable future actions that are described under the Proposed Action for impacts to air quality and climate change. Since petroleum production and use depend primarily on consumer demand, the amount of petroleum consumed in the state would be essentially the same whether the proposed action was carried out or not.

Biological Resources

Proposed Action:
Compliance with the Project Specific Provisions of the 2017 Oil and Gas Programmatic Biological Opinion (08ESMF00-2016-F-0683) and other regulatory mechanisms such as EPA regulation 40 CFR 112, Oil Pollution Prevention, and BLM California IM CA-92-124, Oil and Gas Guidelines for Undesirable Events (NTL-3A) would effectively minimize direct or indirect effects to habitat and species in the San Joaquin Valley, including listed and sensitive species. The BLM has made a "may effect, likely to adversely affect" determination for federally listed species. Cumulative impacts from habitat disturbance would be minimized by purchasing off-site mitigation acreage for federal oil and gas projects, ensuring that land identified as reserves or corridors be conserved as habitat. Sections 4 & 22, T27S, R28E MDBM have approximately 340 wells combined and approximately 160 acres of existing disturbance. When combined with the past, present, and reasonably foreseeable future action disturbance of 160 acres of listed species habitat, this project would contribute 1.092 acres of disturbance in listed species habitat for a total of 161.092 acres of listed species habitat disturbance. This would be 12.58 % of the total listed species habitat available in Sections 4 & 22, T27S, R28E MDBM. The cumulative effects from the additional disturbance of 1.092 acres from the proposed action would be mitigated by the Project Specific Provisions and compensated by the preliminary estimate of compensation acreage of 3.276 compensation acres (1.092 permanent acres compensated at 3:1= 3.276).

No Action:
Under the No Action Alternative, the project would not be developed and therefore the No Action Alternative would not have any contribution to the 160 acres of disturbed listed species habitat from the past, present, and reasonably foreseeable actions located in Sections 4 & 22, R28E MDBM.

Paleontological Resources

Proposed Action:

The sections that the proposed projects are in are predominately comprised of surface geological formations that are classified as Potential Fossil Yield Classification (PFYC) level 4, Kern River Geological Formation. PFYC 4 formations have a high potential to contain vertebrate fossils or scientifically significant invertebrate fossils. Continued development of these leases and new ground disturbance may impact paleontological resources in these sections. However, under the Mineral Leasing Act, paleontological resources management on split estate lands is conducted under the direction of the private surface estate landowner. For both leases for this project, the private landowners have proposed modified monitoring strategies (CAS019301C (Alta Vedder; Fee Wells)) or have waived paleontological monitoring and mitigation on their leases (CACA004999 (Rench Lease; King Wells)).

In the analysis area of Sections 4 & 22, R28E MDBM there are a total of 340 wells that have created 160 acres of disturbance. The 160 acres of disturbance are mostly located in PFYC 4. When combined with the past, present, and reasonably foreseeable future actions this project would contribute 1.092 acres of disturbance located in PFYC 4. This would be 12.58% of the total PFYC 4 area available in Sections 4 & 22, T27S, R28E MDBM. In addition, the monitoring strategies described above would reduce the impacts to paleontological resources through providing identification of paleontological resources during ground disturbing activities. Once identified, the appropriate reporting and mitigation steps can be conducted for the Alta Vedder Lease Wells (CAS019301C), depending on private landowner wishes. As the private landowner has waived mitigation for the Rench Lease (CACA04999), no monitoring or mitigation steps are required.

No Action:
Under the No Action Alternative, the project would not be developed and therefore the No Action Alternative would not have any contribution to the 160 acres of disturbance located primarily in PFYC 4 from the past, present, and reasonably foreseeable actions located in Sections 4 & 22, R28E MDBM.

Soil Resources

Proposed Action:
In the analysis area of Sections 4 & 22, R28E MDBM there are a total of 340 wells that have created 160 acres of disturbance that are located on with a medium erosivity index. When combined with the past, present, and reasonably foreseeable future actions this project would contribute 1.092 acres of disturbance located on soils with a medium erosivity factor.

Cumulative effects are expected to be minimized with the implementation of interim and final reclamation measures required in the Design Features. In addition, soils altered by project activities would be compensated for offsite as required by the Project Specific Provisions. Although the Provisions are intended to compensate for habitat disturbance, they effectively compensate for soil disturbance as well because development is restricted on compensation lands. Thus, soil disturbance would be inconsequential at a local, regional, and global scale. The project does not propose cut and fill therefore erosion concerns are not anticipated.

No Action:
Under the No Action Alternative, the project would not be developed and therefore the No Action Alternative would not make any contribution to the 160 acres of disturbance located on soil with a medium erosivity index from the past, present, and reasonably foreseeable actions located in Sections 4 & 22, R28E MDBM.

Water Quality and Quantity

Proposed Action:
There would be no cumulative impacts to water quality and quantity from the Proposed Action alternative because the design features and engineering controls would result in no direct or indirect impacts.

No Action:
There are no cumulative impacts associated with the No Action alternative because the project would not occur.

Chapter 5. Consultation and Public Involvement

Biological Consultation
Formal consultation with the U.S. Fish and Wildlife Service was initiated in 2016. The Fish and Wildlife Service issued a "No jeopardy" biological opinion on December 22, 2017 (Programmatic Biological Opinion on Oil and Gas Activities on Bureau of Land Management Lands in the San Joaquin Valley, 08ESMF00-2016-F-0683).

Persons, groups, and agencies consulted
Kevin Coodey, Assistant Field Manager for Minerals
Palmira Hernandez, California Resource Production Corporation

SUMMARY OF PUBLIC PARTICIPATION
The BLM posted notification that it was considering these NOSs/APD's on the E-Planning public website on August 1st, 2022. This notice initiated the 30-day scoping period. The BLM also posted copies of the Application for Permit to Drill (APD) in the front lobby of the Bakersfield Field Office for that 30-day period. Comments from the Center of Biological Diversity and Earth Justice were received. Comments have been addressed in this EA.

Recipients of Native American Notification Letters (TNL# 21-1 and 21-03)
Tule River Indian Tribe

Tejon Indian Tribe
Santa Rosa Rancheria Tachi Yokut Tribe

LIST OF PREPARERS
Zachary Day, Archaeologist, Cultural and Paleontological Resources
Fernando Baños, Natural Resource Specialist
Matthew Thomas, Natural Resource Specialist
Frank Giles, Air Resource Specialist

Chapter 6. References

Bureau of Land Management (BLM) 2007. Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands. Instruction Memorandum No. 2008-009, released October 15, 2007.

Bureau of Land Management (BLM), 2016. Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands Instruction Memorandum No. 2016-124, released July 20, 2016.

Bakersfield Resource Management Plan, December 2014. Bakersfield Field Office, Bakersfield, California.

Bureau of Land Management (BLM). 2017. Central Coast Field Office Draft Resource Management Plan Amendment and Draft Environmental Impact Statement for Oil and Gas Leasing and Development. Index No. BLM/CA/PL-2017 /001+1610+1675+1793. Central Coast Field Office, Marina, California. January 5, 2017.

Bureau of Land Management (BLM). 2019. Bakersfield Field Office Hydraulic Fracturing Final Supplemental Environmental Impact Statement. Bakersfield Field Office, Bakersfield, California. November 1, 2019.

Bureau of Land Management Cultural Resource Inventory Report 6000-2014-63. Class III Inventory of 160 acres, Sarrett and Matthew Fee Leases, Poso Creek Oil Field, Kern County, CA. Russell Kaldenberg and Peter A. Carey, ASM Affiliates. On file at the Bureau of Land Management Bakersfield Field Office and the San Joaquin Valley Archaeological Information Center.

Bureau of Land Management Cultural Resource Inventory Report 6000-2016-10. Class III Inventory, Vintage Alta Vedder Well Pads, and NRHP Eligibility Evaluation, Site AV-1, Kern County, California. Peter Carey, Russell Kaldenberg, & Jena Rizzi, ASM Affiliates. On file at the Bureau of Land Management Bakersfield Field Office and the San Joaquin Valley Archaeological Information Center.

Bureau of Land Management Cultural Resource Inventory Report 6000-2018-63. Class III Inventory, CRC Poso King and Rench, Kern County, California. Sherri Andrews, ASM Affiliates. On file at the Bureau of Land Management Bakersfield Field Office and the San Joaquin Valley Archaeological Information Center.

BLM Paleontological Resource Inventory Report #6000-2017-20P. Paleontological Resource Assessment, Mount Poso and Kern Front Oil Field Master Development Plans Section 4 and Section 22, T27S R28E; Section 22 and SW ¼ Section 14, T28S R27E Kern County, California Shelly L. Donohue and Thomas A. Deméré, PaleoServices, 2017. On file at the BLM Bakersfield Field Office.

California Air Resources Board (CARB), 2009. The California Almanac of Emissions and Air Quality–2009 Edition. Available at: http://www.arb.ca.gov/aqd/almanac/almanac09/almanac09.htm

California Air Resources Board (CARB), 2019. California Greenhouse Gas Inventory for 2000-2017, by Category as Defined in the 2008 Scoping Plan. Updated: August 12, 2019.

California Air Resources Board (CARB), 2020. Climate Change Programs. Retrieved from: http://www.arb.ca.gov/cc/cc.htm.

California Council on Science and Technology (CCST). 2014. Advanced Well Stimulation Technologies in California. August 28, 2014. http://ccst.us/publications/2014/2014wstES.pdf.

California Department of Conservation, Division of Oil, Gas, & Geothermal Resources, 1998. California Oil and Gas Fields, Volume I, Fourth Edition. Sacramento, California.

California Department of Conservation, Division of Oil, Gas, & Geothermal Resources (CCDOGGR), 2015. SB4 Environmental Impact Report. Available at: http://www.conservation.ca.gov/dog/Pages/SB4_Final_EIR_TOC.aspx

California Council on Science and Technology (CCST), 2015. An Independent Scientific Assessment of Well Stimulation in California, Volume II: Potential Environmental Impacts of Hydraulic Fracturing and Acid Stimulations. Available at: http://ccst.us/publications/2015/160708-sb4-vol-II.pdf

California Department of Fish and Wildlife, 2008. California Natural Diversity Database. Sacramento, CA.

California Department of Water Resources (DWR), 1996. California's Groundwater – Bulletin 118: San Joaquin Valley Groundwater Basin. Available at: http://www.water.ca.gov/groundwater/bulletin118/tulare_lake.cfm

California Department of Water Resources (DWR), 2003. California's Groundwater – Bulletin 118, Update 2003: Tulare Lake Hydrologic Region. Available at: http://www.water.ca.gov/pubs/groundwater/bulletin_118/california's_groundwater__bulletin_118_-_update_2003_/bulletin118_7-tl.pdf

California Department of Water Resources (DWR) (online), 2014. Water Data Library. Available at: http://www.water.ca.gov/waterdatalibrary/index.cfm

California Regional Water Quality Control Board – Central Valley Region (CRWQCB – CVR), 2004. Water Quality Control Plan for the Tulare Lake Basin, Second Edition. Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/tlbp.pdf

Clean Water Act

33 U.S.C. §1251 et seq. (1972) The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.

Intergovernmental Panel on Climate Change (IPCC), 2014. Climate Change 2014 Synthesis Report Summary for Policymakers. Retrieved from: http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf.

King, George E., and Daniel E. King, 2013. Environmental Risk Arising From Well Construction Failure: Differences Between Barrier Failure and Well Failure, and Estimates of Failure Frequency Across Common Well Types, Locations, and Well Age. Society of Petroleum Engineers. Available at: https://www.onepetro.org/conference-paper/SPE-166142-MS

Mitchell, David C., 1989. The Effects of Oilfield Operations on Underground Sources of Drinking Water in Kern County. California Department of Conservation, Division of Oil and Gas.

Resource Conservation and Recovery Act
40 CFR § 30.16

Safe Drinking Water Act
§300f et seq. (1974) The Safe Drinking Water Act (SDWA) was established to protect the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources.

San Joaquin Valley Air Pollution Control District (SJVAPCD), 2016. Climate Change Action Plan. Retrieved from: http://www.valleyair.org/programs/CCAP/CCAP_menu.htm.

San Joaquin Valley Air Pollution Control District (SJVAPCD) (online), 2020. Current District Rules and Regulations. Available at: http://www.valleyair.org/rules/1ruleslist.htm

San Joaquin Valley Air Pollution Control District (SJVAPCD), 2010. Annual Report to the Community. Available at: http://www.valleyair.org/General_info/pubdocs/AnnualReport2010-web.pdf

U.S. Department of Agriculture, National Resources Conservation Services, 2009. Soil Survey of Kern County, California, Southwestern Part. Prepared by Soil Conservation Service in cooperation with the regents of the University of California. U.S. Government Printing Office, 2009.

U.S. Department of Agriculture, Soil Conservation Service, 1988. Soil Survey of Kern County, California, Northwestern Part. Prepared by Soil Conservation Service in cooperation with the regents of the University of California. U.S. Government Printing Office, September 1988.

U.S. Environmental Protection Agency (EPA), 2004. Guidance Document Reasonable and Prudent Practices for Stabilization (RAPPS) of Oil and Gas Construction Sites. Prepared by Horizon Environmental Services, Inc. April 2004.

U.S. Department of Energy (DOE), 2015. State of California Energy Sector Risk Profile https://www.energy.gov/sites/prod/files/2015/05/f22/CA-Energy%20Sector%20Risk%20Profile.pdf

U.S. Environmental Protection Agency. 2019. "Inventory of U.S. Greenhouse Gas Emissions and Sinks; 1990-2017." https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf.

United States Environmental Protection Agency (EPA), 2016. Regulatory Initiatives. Retrieved from: https://www3.epa.gov/climatechange/EPAactivities/regulatory-initiatives.html.

U.S. Fish and Wildlife Service (USFWS), 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California.

U.S. Fish and Wildlife Service (USFWS), 2017. Programmatic Biological Opinion on Oil and Gas Activities on Bureau of Land Management Lands in the San Joaquin Valley (08ESMF00-2016-F-0683). December 22, 2017.

BLM. (2022). *2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends*. Retrieved from https://www.blm.gov/content/ghg/2021

EIA. (2021, 06 10). *Supply disruptions and rising demand boosted East Coast petroleum product imports in March.* Retrieved 10 01, 2021, from https://www.eia.gov/todayinenergy/detail.php?id=48316

EIA. (2021, 2022, 2023). *U.S. Energy Information Administration - Annual Energy Outlook*. Retrieved from https://www.eia.gov/outlooks/aeo/

EIA. (2023, 3). *Short-Term Energy Outlook*. Retrieved from https://www.eia.gov/outlooks/steo/

EPA. (2022, 4 28). *GHG Equivalancy Calculator*. Retrieved from https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

EPA. (2022, 4 28). *Inventoyr of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020*. Retrieved from https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2020

NETL. (2009). *2008 Development of Baseline Data and Analysis of Life Cycle Greenhouse Gas Emissions of Petroleum-Based Fuels. Tables 3-10, 4-55, and 5-10.* DOE/NETL-2009/1346.

NETL. (2019). *Life Cycle Analysis of Natural Gas Extraction and Power Generation. Appendix F, Table F-31.* DOE/NETL-2019/2039.

Reuters. (2022, 10 19). Retrieved from https://www.reuters.com/business/energy/energy-crisis-revives-coal-demand-production-2022-10-19/